Business Horizons (2014) 57, 117—125

Available online at www.sciencedirect.com

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Competing in network markets: Can the winner take all?

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KEYWORDS
Network effects;
Network intensity;
Installed base;
Winner-take-all;
Competitive strategy;
Innovation

Abstract Products as varied as software, credit cards, and even coffee makers are influenced by network effects whereby the product's value is contingent upon the number of people using it. In turn, markets for these products offer lucrative returns to managers who can leverage the dynamics in their favor. This article describes recent research focusing on the factors that influence success and failure in network markets. We offer recommendations and initiatives that increase the likelihood of success in network markets for entrepreneurs and incumbents alike.

1. Strategy in network markets

In mid-2008, social networks were at a crossroads. Both MySpace and Facebook had tens of millions of unique monthly visitors, yet there was significant uncertainty regarding the future of social networks. Which platform would win the battle for users and visitors? Could both maintain a viable position in the market, or was this a winner-take-all competition, with no possibility of multiple competing networks? The stakes were substantial as users, advertisers, and game developers all wanted to associate with the most popular platform: users to maximize their potential for social interaction, and advertisers and developers to maximize potential revenue streams. In addition, powerful competitors like Google and upstarts such as Twitter sought to expand their own presence in this burgeoning market.

The high stakes in this battle—and Facebook's eventual dominance of social networks—are grounded in a relatively simple social dynamic: consumers often prefer to be part of a large network of other users of the same product. For example, users of online auction sites such as eBay value a large potential audience of buyers for their goods just as credit card users desire a large number of retail settings where their cards can be used. These 'network effects' have important implications for management in various industries—from social networks to coffee makers—and strongly influence various facets of the market including new product development, diffusion, and competitive success or failure for firms (Eisenmann, 2007; Eisenmann, Parker, & Van Alstyne, 2011; McIntyre & Subramaniam, 2009).

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0007-6813/$ — see front matter
http://dx.doi.org/10.1016/j.bushor.2013.09.005

The essential features of network effects are well-established: when consumers desire interaction and compatibility with others, one company often ends up dominating the market for a given good (Farrell & Saloner, 1985; Katz & Shapiro, 1985; Schilling, 1998). This phenomenon of winner-take-all markets is driven by both direct and indirect network effects. *Direct network effects* occur when consumers value a large network of users for a given product; the larger the network, the more value it offers to consumers. For instance, Facebook's large network of users currently offers consumers a substantial cohort with which they can interact and share information. *Indirect network effects* are the benefits to consumers of the variety and availability of complements to the core product (Venkatraman & Lee, 2004). For example, in each generation of video game consoles, the console with the largest network of users will tend to have a wide variety of game titles available, as producers of these titles hope to reach the largest possible audience.

In tandem, the presence of direct and indirect network effects in a given market are thought to offer positive feedback to early leaders in such markets because firms with an early, large *installed base* of users will tend to be favored by consumers; as this user base grows, it becomes more attractive to potential consumers (Eisenmann, Parker, & Van Alstyne, 2006; Schilling, 2002). In turn, more complements will be available for the leading product. As Sony's Blu-ray technology gained traction over the competing HD-DVD format, movie studios and retailers offered a greater number of Blu-ray movie titles. When consumers find increasing value in a growing installed base and a wide variety of available complements, one product (and its sponsoring firm) may eventually 'lock-in' the market for a given good. For instance, Microsoft's traditional dominance in office productivity software is thought to be partly a function of network effects, which created strong barriers to competitors entering the market (Brynjolffson & Kemerer, 1996; Liebowitz & Margolis, 1999).

However, despite the depth of research on network effects and their impact on competitive outcomes, at least two factors suggest the need for a more comprehensive understanding of these dynamics for managers in 'network markets': markets where network effects may strongly influence competition. First, extant views of strategy in network markets focus largely on first-mover advantages to establish an early network of users, yet early movers also risk being locked out of the market due to an insufficient grasp of user needs (Schilling, 1998). Not all dominant firms in network markets were first movers: Facebook and Apple were relatively late movers in social networking and digital music, yet were still able to achieve dominance in their respective markets. Second, the influence of network effects appears to be both increasingly common and increasingly complex across markets. For example, while products like smart phone operating systems and video game consoles may exhibit certain features of network effects, they do not appear to engender the classic winner-take-all dynamics described in previous research, as multiple firms have been able to achieve sustainable positions in these markets. In addition, network effects are often associated with high-technology markets, yet their influence may also extend to more conventional markets such as real estate, credit cards, and health maintenance organizations (HMOs).

Given the increasing prevalence and complexity of network effects, this article offers four critical considerations for managers in network markets. First, what determines the intensity of network effects for a given product or market? Second, can network effects be strategically generated and/or manipulated in favor of one firm? Third, given that network markets tend to strongly favor large incumbents with a large base of users, how can entrepreneurs and small businesses overcome existing dynamics? Finally, how can incumbents best defend their competitive position in network markets? In addressing these questions, we hope to illustrate the complexity of competitive dynamics in network markets yet also provide insights regarding effective strategy frameworks.

2. What determines the intensity of network effects?

Some markets, such as social networking, appear to exhibit classic dynamics of network effects whereby consumers value the largest possible cohort of other users of the product. In these markets, the conventional wisdom holds in that once a given firm establishes a critical mass of adopters, the market tends to tip in favor of that firm (Chacko & Mitchell, 1998; Schilling, 2002; Shapiro & Varian, 1999). Thus, one technology (and its sponsoring firm) will usually dominate the market as a result of consumers' strong desire for interdependence, in tandem with a relatively low cost of expanding scale in many of these markets. For instance, eBay was able to achieve market dominance in online auctions due to a combination of preemption—launching the site before potential competitors—and low marginal costs of facilitating additional users.

Yet online auctions and social networking represent a relatively small subset of markets influenced