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# User generated brands and their contribution to the diffusion of user innovations

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ABSTRACT

It has been argued that users can create innovations and also diffuse them peer-to-peer independent of support or involvement by producers: that "user-only" innovation systems can exist. It is known that users can be incented to innovate via benefits from in-house use. But users' incentives to invest in diffusion are much less clear: benefits that *others* might obtain from their innovation can be largely or entirely an externality for user innovators.

Of course, effective distribution of information products can be done near-costlessly via posting downloadable content – for example, software – on the Internet. However, potential adopters must still learn about the product and trust its qualities. In producer systems, this aspect of diffusion is heavily supported via the creation of trusted brands. It has been shown that brands help to increase awareness, to communicate a product's benefits, and to reduce perceived risks of adoption. The development of brands by producers is traditionally seen as a very costly exercise – unlikely to be thought of as worthwhile by users who expect little or no benefits from the diffusion of their innovations to others. In this paper, we explore the creation of a strong and trusted brand by the Apache software community – and find it was created costlessly, as a side effect of normal community functioning. We think the *costless* creation of strong brands is an option that is generally available to user innovation communities. It supports, we propose, the existence of robust, user-only innovation systems by helping to solve the problem of low-cost diffusion of trusted user-developed innovations.



## 1. Introduction and overview

It is known that users innovate to solve their own needs, and that sometimes these user innovations later provide the basis for successful commercial products. Sports equipment such as the rodeo kayak (Baldwin et al., 2006), mountain bike (Lüthje et al., 2005), snowboard (Shah, 2000), and surfboard (Franke and Shah, 2003), medical equipment (Lettl et al., 2006), juvenile products such as the baby jogger (Shah and Tripsas, 2007), services such as computerized commercial banking services (Oliveira and von Hippel, 2011), computer games (Jeppesen and Molin, 2003), and films in the animation genre (Haefliger et al., 2010) are examples where user innovations became successful in the market.

But these examples involve *producer* commercialization and marketing of *user*-developed innovations. What about the possibility of user innovation followed by *user* innovation diffusion – e.g., a pure user innovation process with no producer required (von Hippel, 2007)? Here, a problem appears. Both users and producers have incentives to innovate, but only producers have a high inbuilt incentive to diffuse innovations they develop or acquire from users – because they profit from sales. In contrast, user innovators may gain little or no benefit from the free adoption of their innovations by others, and so may have little inclination to invest in enabling diffusion. Diffusion, in other words, can be largely an externality for users (Raasch and von Hippel, 2012).

To solve this incentive problem, what is needed is free or cheap diffusion options for users. Of course, near-free diffusion of information products and designs for physical products is possible by posting copies for free download on the Internet. But from diffusion research we know that the extent of diffusion of new products or services depends not only on the value of the innovation made available, but also on further criteria such as potential adopters' awareness of the innovation, and the perceived risks associated with adopting it (Rogers, 1976, 2003).

In the case of producer diffusion of innovations, marketing and branding efforts are considered important to help to increase awareness, communicate a product's new benefits, reduce perceived risks, and to raise interest. Further, in addition to the functional value of an innovation, brands offer symbolic or social value such as prestige and recognition–or getting in contact and building relationships with others. The value embedded in the perceived meaning of a brand contributes to the overall benefit provided by the innovation and thereby supports the adoption of

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new products. Hence, brands are significant assets for the diffusion of innovations and also a significant source of profit (Ailawadi et al., 2003; Keller, 1993, 2008).

Marketing and branding efforts are known to be expensive as these activities are customarily done by producers – involving extensive advertising, and so forth. How then can users, expecting limited benefits from diffusion, support or be incented to support innovation diffusion to similar effect? A solution, we find, is that user communities are able to create strong brands *costlessly*, as a side effect of ordinary community activities that they engage in for other purposes and benefits. In this paper we explore how users and user communities market and brand their innovations in order to diffuse and promote them on the market. We further explore the strength of costless user-generated brands relative to the strength of producer-generated brands.

In an empirical case study on the Apache software community – a user group centered around their common interest of software development – we document the costless creation of a strong brand by users. We find that the community has created a user brand that has strong and favorable associations in the minds of both community and non-community members, and that can command considerable price premiums. We also find that the Apache brand was indeed created as a costless by-product of community member interactions.

We think these findings contribute a novel element to an important, rapidly evolving larger story: users are increasingly being empowered with respect to a number of important economic activities ranging from the creation of new product designs, to the creation and widespread diffusion of innovations (Baldwin and von Hippel, 2011; Benkler, 2006).

Our paper is structured as follows. In Section 2, we review the literature on branding and marketing activities related to the diffusion of innovations and user involvement in these activities. In Section 3, we describe our case study research setting and methods used. In Sections 4 and 5, we present our research findings, in Section 6 we discuss the implications of brands as user-generated content.

## 2. Review of the literature

### 2.1. Diffusion of innovations and the role of branding

Innovation refers to invention and exploitation (Roberts, 2007) of useful and novel offerings (Amabile, 1997). This means inventions have to diffuse via the market and/or via peer-to-peer diffusion in order to become successful innovations. Diffusion research shows that the adoption of new products depends on factors such as adopter awareness of the innovation, its perceived value, and perceived risk (Rogers, 1976, 2003). Marketing and branding efforts support the diffusion of innovations by providing potential adopters with information on these matters. Successful experiences by early adopters can then lead to adopter loyalty and advocacy with respect to the value of the brand and product (Barry and Howard, 1990; Vakratsas and Ambler, 1999)

Brands are especially important for early diffusion of innovations. Imperfect and asymmetric information about the new product characteristics lead to uncertainty, create risks (functional, financial, physical, psychological, and social) and costs (information-gathering and information-processing) for consumers (potential users) (Erdem and Swait, 1998). Thus, consumers need to make use of credible signals, such as brands, to reduce this uncertainty (Erdem et al., 2006). Brands help consumers to navigate through the product jungle, take the right decisions, and cope with this mental overload through the explosion of information (Solomon, 2011).

### 2.2. How brands evolve

The American Marketing Association (AMA), defines a brand as a "name, term, sign, symbol, or design, or a combination of them intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of competition" (Kotler, 1997, p. 443). In legal terms, a brand is a trademark. Technically this means that whenever a marketing manager creates a name, label, or symbol for a new product he or she creates a brand. In real-world marketing practice, however, the term brand is reserved for a name or symbol that has created a certain amount of awareness, reputation, and prominence in the marketplace (Keller, 2008).

Strong brands exist when positive associations are linked to brand names or symbols within the minds of potential customers – and when many people share very similar associations. When producers "create and shape brands," usually they are investing money to create and diffuse stimuli, such as advertisements, promotion campaigns, sponsorships, or testimonials, among potential customers that will trigger those individuals to create and shape positive and strong brand-related associations within their minds. When many potential customers are induced to generate similar and positive associations, the result is a strong, commercially exploitable brand.

Marketers apply a variety of tools to build and reinforce a powerful brand position. Besides the branded product/innovation itself, it is the communication and promotion, the history and heritage of the brand, as well as the interaction with others which contributes to the strength of a brand (Keller and Lehmann, 2003). The quality and quantity of these actions influence customers' perception of the brand. Constant brand-building activities and investments are necessary in order to maintain an attractive and highly desirable brand. Otherwise the "brand's revenue premium will gradually decay to the level of a private label." Ailawadi et al. (2003, p. 15).

### 2.3. Brand value

Although building a strong brand requires extensive efforts and constant investments, it offers the potential of high returns. The value firms derive from building and owning a brand is known as brand equity (Aaker, 1996). Generally, brand equity is defined as market outcomes that accrue to a product with its brand name compared to outcomes that accrue if the same product did not have the brand name (Ailawadi et al., 2003; Keller, 1993, 2008).

Brand value means different things to profit-seeking brand producers and to brand users. From a producer perspective, strong brands are those that enhance profits. The valuation of the brand as a financial asset - the price at which it can be sold or a valuation of achievable licensing fees and royalties–is termed brand equity. For example, the value of the McDonalds brand has been calculated to be 71% of that firm's total value on the stock market, and the value of the Coca Cola brand has been calculated as 64% of the total market value of that firm (Keller, 2008). Price, market share, revenue, and cash flow may be further indicators to determine a producer's brand equity.

From a user perspective, brand equity is the "differential effect of brand knowledge on consumer/(user) response to the marketing of the brand" (Keller, 1993, p. 2). Brand awareness, perceived brand quality, brand loyalty, and brand associations – broadly defined as anything which comes into a persons' mind when thinking about a brand – drive user-based brand equity (Aaker, 1991, 1996). Based on brand associations, users decide if they are willing to pay the charged price for the brand or not. For grocery products across 20 product categories (e.g. coffee, cereals, and soft drinks), consumers for example are willing to pay a price premium of 35% compared to private label brands (Sethuraman and Cole, 1999). In the luxury