

Chapter X

Should Buyers Try to Shape IT Markets Through Nonmarket (Collective) Action?

Antecedents of a Transaction Cost Theory of Network Effects

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ABSTRACT

This chapter develops a transaction cost theoretic model of network effects and applies it to assessing the chances of users to influence, through collective action, the range of technological choices available to them on IT markets. The theoretical basis of the model is formulated through a number of empirically refutable propositions that overcome some conceptual and empirical difficulties encountered by the traditional interpretation of network effects as (positive) network externalities. The main difference between our model and modeling network effects as network externalities is that network effects are seen as caused by the costs of purchasing and marketing new technology, that is, transaction costs, rather than by the benefits of using a new technology. A first application of the model suggests that users can significantly improve the chances of replacing an established technology with a new, potentially superior one if they set up an organizational structure that serves as a conduit of information exchange and knowledge sharing. This, however, would call for a rather different type of collective user action than exists today in the form of user groups.

INTRODUCTION

As information technology increasingly permeates all kinds of business operations, firms' dependence on IT increases too. This would be of no concern if IT markets were perfectly elastic, not only in terms of quantity supplied but also in terms of responsiveness to new requirements as they arise. However, throughout its entire history, the IT industry has been characterized by the emergence of *de facto* standards that proved rather long lived and difficult to replace. Bresnahan and Greenstein (1999) have described this phenomenon as the dominance and persistence of technological platforms and shown how the history of the IT industry can be described as a history of long periods of stable platforms punctuated by rare events of platform replacement. While Bresnahan and Greenstein have refrained from evaluating this phenomenon from a normative point of view, corporate IT users should be worried by it in light of much of the rich economic literature on standards. Specifically, that literature revolves around the concept of positive network externalities (PNE) according to which network products become more valuable to buyers as the network grows in size (Katz & Shapiro, 1985). As the PNE concept has also been applied to standardization processes in the realm of information technology, where standards ensure that different components can easily be assembled into larger systems (Katz & Shapiro), it seems that users quickly are locked in to a particular platform even when other technologies may have emerged that could much better serve their needs were it not for the accumulated benefit of the existing technology's large installed base that prevents that new technology from being successful on the market. Thus, apart from hoping for favorable idiosyncratic historical events, the only way to have users dislodge an existing platform and replace it with another one based on a better technology would consist of massive collective action in which users jointly specify a

new platform and collectively commit themselves to these specifications. This form of collective user action would be an instance of user-driven *ex ante* standardization. Although such collective action has been attempted in the past (Dankbaar & van Tulder, 1992), to our knowledge there is no successful instance of it so far. Also, from a theoretical point of view, it has been argued that users do not have the ability to engage in such action, both individually and collectively (Jakobs, 2000).

This reasoning would apply if the emergence and dominance of technological platforms in the IT industry were indeed driven by positive network externalities. Bresnahan and Greenstein (1999) have convincingly shown how the structure and evolution of the IT industry can be explained by the phenomenon of sunk costs, that is, costs related to the production of system components that are irreversible such as investments in programming, training, and research. In this chapter we want to extend that analysis from a transaction cost perspective, which is largely excluded from Bresnahan and Greenstein's work but which we deem a necessary complement to their work. We will also link that perspective to the discussion of network effects by providing a transaction cost interpretation of network effects as an alternative to the standard interpretation of network effects as positive network externalities. We will show that the interpretation of network effects as positive network externalities leads to a number of conceptual problems that are avoidable through a transaction-cost-based interpretation. We also show how that new interpretation allows for a different form of collective user action, one aimed at stimulating the offering of alternative technological platforms and thus increasing the range of choices corporate users have on IT markets.

In the next section we will briefly recapitulate the literature on network externalities as it is relevant to the focus of this chapter. In the third section, several problems resulting from interpreting network effects as network externalities will

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