INTERCONNECTIVITY IN THE DIFFUSION OF TECHNOLOGICAL INNOVATIONS

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ABSTRACT

This paper deals with a complex interaction between consumer innovations and the consumers who adopt them. Diffusion of innovations is usually examined one innovation at a time or, less commonly, as paired innovations which are substitutes or complements. The interconnectivity of interest here is of a much wider and less direct nature.

Because many consumer innovations involve communications, prior adoption of such innovations affects the rate of diffusion for subsequent innovations. That is, diffusion is accomplished in a process of social communications, so that prior adoption of any communication-enhancing technology can accelerate and broaden the transmission of both functional information and the social meanings which become attached to new innovations.

The paper proposes that two main factors underlie the interconnectivity phenomenon. First, the prior adoption of innovations which enhance communication collectively constitute an infrastructure in which information flows ever more quickly and ever more widely. In other words, the prior adoptions constitute a network externality which speeds the dissemination of knowledge for all subsequent innovations, whether or not the subsequent technologies themselves involve communications. Second, the social status of early adoption has become steadily more positive over the course of this century. Ownership and display of innovations, particularly communications technology, conveys prestige so that early adoption is motivated by social recognition.

Social networks comprise the structure of interpersonal communications and work to clarify the social meanings of new objects in the social environment. Networks are thus the appropriate level at which to assess interconnectivity in the diffusion of innovations. For the present purpose, strong network links may be viewed as affecting network norms of adoption as a means of group cohesion. Weak network ties, on the other hand, function to transmit social meanings between networks by linking distant groups. Prior adoptions of communication innovations facilitate and extend both strong and weak network links, but may have more impact on weak links.

It has been observed that product life cycles have gotten shorter over the course of this century, for example the diffusion rate of cell phones is much higher than that of digital-dial telephones and the diffusion rate of color TV is much higher than black and white. Interconnectivity is a contributing factor, possibly a principal factor, in the compression of product life cycles observed over the course of the century.

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