

Chapter XXV

Characteristics of Farm and Rural Internet Use in the United States

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ABSTRACT

The Internet became enmeshed in U.S. businesses management practices over the last decade. During this period access and use of the Internet increased for all regions of the United States, most types of work places, and all income groups. In this study we examine Internet use by farm and rural workers and proprietors using descriptive statistics and market demand analysis. In our market demand analysis approach, the primary methodology we use is categorical dependent variable analysis. The results indicate income is a critical element, though other factors such as age of proprietor and rural-urban location are also significant in market demand determination.

INTRODUCTION

The Internet has become a major management tool in the United States in the years since the Internet was spun out into the private sector. For instance, today more than 13% of U.S. wholesale trade is conducted over the Internet. The increase in Internet activity has been especially rapid over the last decade. The prevalence of Internet activity goes across all regions, income groups, and most types of work places. Internet access and use, however, is not unvarying across the economic-geographic spectrum. For instance, while wholesale trade over

the Internet in the United States is at 13%, wholesale trade in the farm sector is only around 3%.

In this study we examine factors that underlie U.S. farm and nonfarm business Internet use, and may be causal for the observed spatial and economic sector patterns. Our study addresses these underlying factors in Internet use by examining market demand for information technologies, that is, the Internet. We explicitly test the factors in logistic regression models of Internet use in the farm and nonfarm sectors.

BACKGROUND

Diffusion in the Use of the Internet

Theories of diffusion offer an effective guide to the observed spatial and socioeconomic patterns in Internet usage. According to the theories, adoption rates are jointly determined by consumers' willingness to pay for the new product and service providers' profitability from entering new markets. Often, observed behavior is explained by the concept of the S-Curve. The S-Curve is the path that the introduction of new technology takes as it is adopted across the economy over time (Davies, 1979; Mahler & Rogers, 1999; Rogers, 1995). The S-Curve is the result of three well-known stages in the adoption of new technology when the technology becomes broadly spread in the economy.

The first stage represents early adopters. In the case of Internet use when the Internet entered the public domain, it was the more entrepreneurial businesses and wealthier households that were first to use it. Early adopters were among the most educated and had more knowledge about the new technology (Leamer & Storper, 2001; Greenstein, 1999; MacKie-Mason & Varian, 1997).

In the second stage, the middle of the S-curve, the rate of adoption picked up. The technology moved beyond early adopters. The Internet's value and risk became better known. The slope of this middle portion of the S-Curve is thus the steepest of the three stages. All consumer and business groups had rapid increases in penetration rates prior to 2002 (Brown, 2000; Forman, Goldfarb, & Greenstein, 2002; Greenstein & Prince, 2006).

Eventually the new adoption rate slows down. No penetration rate, after all, will ever exceed 100%. This is the third and final stage of the S-curve and the one that the United States appears to be in now. The higher income groups already show signs of leveling off (NTIA, 2004; Malecki, 2002; Stenberg, 2006). The results for Internet service are consistent with the normalization model of technology diffusion. While the Internet continues to spread across businesses and consumer groups, most changes that are occurring today involve the improvement in Internet service and types of use,

and not simply going from nonuse to use (Greenstein & Prince, 2006; Stenberg, 2006).

Private Sector Internet Use

While some studies have described the changing user demographics of Internet use, such as the series of studies by the National Telecommunications and Information Administration and Economic and Statistics Administration (NTIA) that started in 1994, more recent studies describe the current and more static situation or examine the adoption of newer broadband technologies. Household studies by Choudrie and Dwivedi (2005, 2006a), Stanton (2004), and the U.S. General Accounting Office (2001) tested socioeconomic factors distinguishing adopters and nonadopters of broadband Internet use. Choudrie and Dwivedi (2005) found age, gender, and social grade were important when distinguishing between adopters and nonadopters. Their 2006 study found that characteristics such as income and education were just as important factors. Stanton (2004) tests for a digital divide and finds it the widest for computer ownership and the narrowest for broadband Internet connections.

Most studies on Internet adoption have focused on the household. The series of studies by NTIA and the PEW Internet & American Life Project, for example, have described differences across many demographic and geographic groupings, not only for households, but also Internet activity in the workplace. The NTIA and PEW studies have described the increasing universality of workplace Internet use.

All workplace studies hypothesize that businesses accrue benefits from the adoption of the Internet into their management practices. In the case of this study, it can be further posited that farm and rural businesses may accrue more benefits from Internet use than urban businesses because of their relative isolation. The Internet compensates for their distance from major markets. Internet use increases market choices, information sources, and continuing education opportunities. These benefits, however, will not necessarily readily translate into higher demand. Demand depends on many factors such as gross income, educational attainment, and age of the managers.

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