Available online at www.sciencedirect.com
ScienceDirect
Journal of Banking & Finance 31 (2007) 1033–1060
Journal of BANKING & FINANCE
www.elsevier.com/locate/jbf

How the Internet affects output and performance at community banks ☆

Robert DeYoung [a,*], William W. Lang [b], Daniel L. Nolle [c]

[a] *Federal Deposit Insurance Corporation, 550 17th Street, NW, Washington, DC 20429, United States*
[b] *Federal Reserve Bank of Philadelphia, Ten Independence Mall, Philadelphia, PA 19106, United States*
[c] *Office of the Comptroller of the Currency, 250 E Street SW, Washington, DC 20219, United States*

Available online 1 December 2006

Abstract

Internet web sites have become an important alternative distribution channel for most banking institutions. However, we still know little about the impact of this delivery channel on bank performance. We observe 424 community banks among the first wave of US banks to adopt transactional banking web sites in the late-1990s, and compare the change in their 1999–2001 financial performance to that of 5175 branching-only community banks. Whereas today virtually all viable community banking franchises offer the Internet banking channel, studying this earlier time period allows us to make clean comparisons between subsamples of "brick-and-mortar" and "click-and-mortar" community banks. We find that Internet adoption improved community bank profitability, chiefly through increased revenues from deposit service charges. Internet adoption was also associated with movements of deposits from checking accounts to money market deposit accounts, increased use of brokered deposits, and higher average wage rates for bank employees. We find little evidence of changes in loan portfolio mix. Our findings suggest that these initial click-and-mortar banks (and their customers) used the Internet channel as a complement to, rather than a substitute for, physical branches.
Published by Elsevier B.V.

☆ The views in this paper are those of the authors and are not necessarily those of the Federal Deposit Insurance Corporation, the Federal Reserve Bank of Philadelphia, the Federal Reserve System, the Office of the Comptroller of the Currency, or the US Department of the Treasury. The authors thank Linda Allen, Rick Sullivan, Paul Wachtel, and two anonymous referees for helpful comments; Cynthia Bonnette for access to a database of Internet banking web sites; and Steve Egli and Darrin Halcomb for research assistance.
* Corresponding author. Tel.: +202 898 3882.
E-mail address: rdeyoung@fdic.gov (R. DeYoung).

0378-4266/$ - see front matter Published by Elsevier B.V.
doi:10.1016/j.jbankfin.2006.10.003

JEL classification: G21; O32; O33

Keywords: Community banks; Internet banking; Process innovation; Product innovation

1. Introduction

Internet banking has gone quickly from being an exotic banking technology to a feature one expects to find at a commercial bank. All of the largest US banks offer Internet banking options for their retail and business customers, and a substantial and growing minority of even the smallest community banks offer Internet access to a variety of their products and services. For example, a recent industry study reported that 9-in-10 medium-sized community banks, and 6-in-10 small community banks, offered their customers round-the-clock account access over the Internet in 2005.[1]

There are good reasons to expect that the widespread availability of Internet banking will affect the mixture of financial services produced by banks, the manner in which banks produce those services, and the resulting financial performances of those banks. However, to date researchers have produced little evidence regarding these potential changes. In this study we use unique data on transactional Internet banking web sites between 1999 and 2001 – a period when Internet banking was still relatively new – to test whether and how Internet adoption affects the product mix, input mix, and financial performance at small US commercial banks. Studying this earlier time period allows us to identify a clean control group of pure "brick-and-mortar" community banks to which we can compare the performance of the Internet-adopting community banks.

Perhaps the most likely way that Internet banking can affect community banking is by influencing the nature of the relationships between banks and their customers. Arms-length interactions with customers over the web can be qualitatively different from in-person interactions with customers at a branch office, and these inter-channel differences have potential implications for banks' business mixes, funding sources, labor forces, growth rates, and risk-return profiles. For example, the web lending channel is better suited to transaction loans such as home mortgages, auto loans, and credit cards, while the branch lending channel is better suited to relationship loans to small businesses (DeYoung et al., 2004). Evaluation of an on-line loan application relies on quantifiable "hard" information that can be entered into an automated credit-scoring model; in contrast, in-person meetings between loan officers and informationally opaque loan applicants can generate the "soft" information needed to establish a credit relationship (Stein, 2002). Another example: Because the Internet channel allows a bank to reach across geographic borders, it can be a conduit for quickly raising large amounts of new deposits by offering above-market interest rates. But unlike core depositors attracted by the convenience of a local branch – as a result, local core depositors are typically price inelastic – web-generated depositors merely provide a commodity input. Such depositors are less likely to develop a

[1] See Grant Thornton, *Twelfth Annual Survey of Community Bank Executives*, April 2005. The study defined a medium community bank as having between $100 and $500 million in assets, and a small community bank as having less than $100 in assets.