

The Adoption of Web and PC Banking at Credit Unions

James P. Dow, Jr.

Department of Finance, Real Estate and Insurance
California State University, Northridge

Working Draft
Not for Quotation

January 10, 2005

Abstract: This paper examines the decision to adopt web and personal computer banking by credit unions. It finds that larger credit unions are more likely to adopt new technologies, are more likely to adopt earlier and are more likely to offer more advanced versions of the technology. There is also some evidence that credit unions that offer more sophisticated technologies also tend to offer interest rate spreads that are less beneficial for their members.

Key Words: Credit Unions, World Wide Web, Financial Innovation

*Department of Finance, Real Estate and Insurance, California State University, Northridge, CA 91330. (818) 677-4539. Email: james.dow@csun.edu.

1. Introduction

Technology is playing an increasingly important role for financial intermediaries. By allowing customers to access banking services without needing to physically visit the bank, customers gain increased flexibility while banks have reduced cost. Frame and White (2004) show that despite the importance of this development there is very little research on financial innovation, in banking or in general. This paper addresses one type of innovation by looking at the factors that affect the adoption decision of web and personal computer (PC) banking at credit unions in the United States over the period 2000-2003.

I find that greater size is the most important factor in the decision to adopt web or PC banking. Also important is the share of delinquent loans at the credit union. There is also a connection between the interest rate spread offered by a credit union and its adoption of technology. This may reflect that the mix of services offered by credit unions can differ, with some credit unions offering better technology and worse spreads, while other credit unions choosing not to offer the technology but providing their members with better spreads.

This study compares behavior from the end of 2000 to 2003 using data from the National Credit Union Association (NCUA). This is a particularly good time to look at web adoption since a large number of credit unions switch to having websites during this period. Credit unions differ from commercial banks in that they are non-profit financial institutions. By law, members of a credit union must have a “common bond”, for example, be employees of the same company, or having the same occupation. However, the interpretation of the common bond requirement has loosened somewhat in recent years, promoting the growth of credit unions and bringing them into conflict with commercial banks. Like commercial banks, the number of individual credit unions has fallen, through merger or disestablishment, despite the increase in the number of members. Because of the increased popularity of credit unions, the relaxation of the common bond requirement, and the reduction in number of credit unions, the average size of credit unions has grown. As we shall see, the size of a credit union is an important determinant of its technological offerings and so policies that affect credit union size will indirectly influence the kind of services that members of credit unions receive.

Frame and White (2004) provide a review of the literature on financial innovation, including the effect of technological innovations. They find there is relatively little research in this area. Much of the research on technology has focused on the question of the adoption of ATMs by banks (Hannan and McDowell, 1984, Saloner and Shepard 1995, and Sinha and Chandrashekar 1992). Pennings and Harianto (1992) have examined the adoption of video

banking. The most relevant papers for this study are Furst, Lang and Nolle (2002) who examine which factors influence the web adoption decision of commercial banks and Sullivan (2000) who looks at the effect of adoption on profitability.

Furst, Lang and Nolle (2002) look at national banks over the period 1998 to 1999. They first compare banks that did not offer websites in 1998, but did in 1999, with banks that did not have a website by 1999, using independent variables measured in 1998. Factors that predict adopting a website include greater assets, an urban location, higher expenses, higher non-interest expenses, a higher ROE, and a better CAMEL rating. They repeat the regressions, comparing banks that had websites in 1998 with banks that did not, and find very similar results, except that now a lower ROE predicts having a website and expenses was not statistically significant. Finally, they divide banks into two groups, those that offer a significant amount of services through the web, and those that don't. They find that offering more services is predicted by greater asset size, smaller importance of deposits, a better CAMEL rating and being an earlier adopter of web technology. Sullivan (2000) examines the effect of internet offerings on banks in the Tenth Federal Reserve District. He finds that banks offering internet services tend to have higher non-interest expenses, but that the difference in ROE was not statistically significant.

This paper addresses many of the same issues as Furst, Lang and Nolle (2002) and Sullivan (2000) from the perspective of credit unions. This perspective is particularly interesting for several reasons. First, there is relatively little research on credit unions, most of it focusing on issues of economies of scale. Since credit unions compete with banks, but are non-profit entities, they provide a different perspective on financial intermediation. Furthermore, with the relaxation of the common bond restriction, credit unions are becoming increasingly important in the banking sphere.

Another reason for the importance of examining credit unions is that, since the year 2000, credit unions have been required to report detailed information on technological offerings. This allows us to examine not only the web adoption decision, but also the decision to offer PC banking, and also to examine the quality of services offered by a credit union's website.

2. The Adoption of Technology by Credit Unions

This study uses data made publicly available by the NCUA through the Yearend Call Report. The collection of detailed data on technology use started in 2000. One question asks whether members can access/perform financial services using a variety of different technologies (note that it is not whether the credit union has a technology, such as websites or phones, but

whether their members can use them to access services). I will compare technology use at the end of 2000 with use at the end of 2003. Table 1 reports the number of credit unions using specific technologies. For the 2000 data, credit unions that did not use the technology, or that did not report, are both listed as missing (in contrast to the 2003 data where non-uses are distinguished from non-responders). The calculation of the percentage using the technology needs to take into account the effect of non-reporting credit unions. In a separate question, credit unions without websites were asked if they were planning to get a website in the future. Credit unions (without websites) that did not respond to this question are considered to be non-responders and were excluded from the data. Credit unions that are reported as missing in the 2000 technology-use question but that are *not* missing from the planning-to-get-a-website question are considered to be non-users.

As can be seen, technology use in general increased over the time period. Traditional banking technologies such as ATMs and phone banking increased somewhat from already extensive levels of use. However, even though these technologies are well established, still only half of credit unions offered these services. The newer technologies of web and PC banking showed dramatic increases in use over this period. The number of credit unions offering a website increased by 67 percent while PC banking increased by 105 percent. Wireless access, while growing at a fast percentage rate, is still available only at a small number of credit unions. This paper's focus on the adoption decision for web and PC banking is consistent with these patterns. ATMs and Phone banking adoptions decisions were to a large extent made before this period. On the other hand, there have not been enough banks adopting wireless technologies to make it a meaningful sample. This sample period is the right time to look at web and PC banking as there are enough new adopting credit unions to be able to see which factors influence the adoption decision.

It is likely that the adoption decisions across types of technologies would be correlated. Factors such as economies of scale would likely affect the utility of many different technologies. Furthermore, some credit unions would have clientele that would prefer greater use of computer/electronic technology, and for that matter, managers of some credit unions may be more predisposed to make use of technological innovations. To see the extent of this, correlations of technological adoption are presented on Table 2 for the year 2003. With the exception of wireless access, the adoption decisions are highly correlated, although not perfectly so. The correlations with wireless use are likely affected by the very small group of credit unions offering wireless access.

The correlation between web banking and PC banking is also likely to depend on how the banks interpret each of these terms. The definitions given by the NCUA are “World Wide Web/Internet: Members access services via the web/internet. Generally, members use a web browser to access services” and “Home Banking Program: Member access services via a home banking computer program. Generally, members use their computer to dial up the credit union and use the credit union supplied computer program to access services” (the term “home banking” is sometimes used in the survey; however, I will use the term PC banking for clarity). Clearly, these are meant to be different things; however, it is also conceivable the some credit unions may interpret offering web-based services as a way of offering home banking services.

3. The Decision to Develop a Website

Using the data from the 2000 and 2003 surveys we can divide banks into three categories: a) credit unions that had web banking by 2000 – these will be called early adopters, b) credit unions that did not have web banking in 2000 but did by 2003 – these will be called late adopters, and c) credit unions that did not have web banking by the end of 2003 – these will be called non-adopters. There is a final category, credit unions that reported having web banking in 2000 but not in 2003. This was a small group and those credit unions were dropped from the sample.

Given this categorization, we can ask how members of one category differ from the others. From a statistical standpoint, the best question to ask is how late adopters differ from non-adopters in terms of their year-2000 characteristics. In 2000, none of these banks had websites, and so we can rule out reverse causation. We would not expect that the adoption decision between 2000 and 2003 would affect the year 2000 characteristics (this is not completely true since credit unions could have been developing websites during 2000 that were not available until after 2000, which could affect costs and other variables in 2000)

We can also ask what distinguishes early adopters from credit unions that did not have a website in 2000 (non-adopters and late adopters). Furst, Lang and Nolle (2002) asked a similar question for commercial banks and used independent variables lagged one year. However, this does not get rid of reverse causation. Banks that have developed a website do not revisit that decision each year. It is likely that the majority of institutions that had websites in 2000 also had them in 1999, and so if there were reverse causation, it would show up when using 1999 data. For purposes of comparability with the earlier regression, year 2000 data will be used for the independent variables, recognizing the possible problem of reverse causation. This will be discussed more later.

A third question is how early adopters differ from late adopters. And finally, a fourth question is how the non-adopters differ from credit unions that eventually (that is, by 2003) have websites (early adopters plus late adopters).

The independent variables are summarized on Table 3. Asset size varies dramatically among credit unions, and so log assets will be used to measure credit union size. The previous literature for commercial banks has found that bank size is a significant predictor for adoption so the estimated sign on this coefficient should be positive.

Delinquent loans will be used as a measure of the financial resources of a credit union. Presumably, credit unions that have a large amount of delinquent loans are less likely to spend money to expand member services. Importantly, there is unlikely to be reverse causation; the decision to adopt a website is not likely to increase the number of delinquent loans. Delinquent loans are measured as a fraction of total loans.

A natural question is whether the decision to adopt a technology affects the profitability of an institution. In the context of commercial banks, it would be natural to think about return on equity, or some equivalent market measure. However, credit unions differ in that they do not have a goal of maximizing profit. What exactly their goal is has been a matter of some debate, however, it is generally accepted that they wish to benefit both their borrowers and their depositors. In other words, they would like to offer both lower lending rates and higher deposit rates. They prefer to reduce the interest rate spread, in contrast to commercial banks that want larger interest rate spreads. A simple way to think about the goal of credit unions is that they want to minimize the interest rate spread. This issue is discussed in more detail in Smith, Cargill, and Meyer (1981), Smith (1984) and Smith (1986).

The interest rate spread will be included as an explanatory variable in some of the regressions. Here, there is a clear channel for reverse causation. Banks that have low costs, and so that can offer a low interest rate spread, may be more willing to develop websites. However, credit unions that develop websites may increase their costs, increasing the interest rate spread. Alternatively, credit unions that make use of technology to reduce their costs may be able to offer a smaller interest rate spread. The decision about technological offerings and interest rate spreads is really a joint decision. The credit union decides what mix of better interest rates and better services it wants to offer. The regressions in this paper that include interest rate spreads are not designed to determine causality, but rather to see if there are any connections in terms of the mix of services offered.

The interest rate spread at a credit union should be directly related to the non-interest expenses and non-interest (fee) income. As an alternate specification, regressions are also run

with the interest rate spread replaced by non-interest expenses and fee income. Both of these variables are measured as a fraction of assets. Again, the point is not to determine causation, but rather to see if there is a connection between these variables. Since larger non-interest expenses should lead to wider interest rate spreads, the coefficients on those two variables should have the same sign, while the coefficients on fee income and interest rate spread should have opposite signs. A different approach to this issue would be to see if adopting credit unions saw a larger increase in their expenses from 2000 to 2003 than non-adopting credit unions.

Interest rate spreads are calculated as: $(\text{interest income})/(\text{loans}) - (\text{interest paid to depositors})/(\text{deposits})$. Deposits at credit unions are known as “shares”, however I will refer to them as deposits for ease of comparison with commercial banks. Interest rate spreads calculated this way can occasionally produce extreme results, including negative values, which are probably not reflective of the credit union’s true situation. To eliminate this, credit unions that reported interest rate spreads below the 5th percentile and above the 95th percentile were eliminated from the sample. To determine the importance of this, regressions were also run with unfiltered data. The unfiltered data resulted in coefficients of somewhat larger magnitude but with very similar significance levels. The values in Table 3 are for the data after it has been filtered. Also, the regressions in Tables 4, 8 and 9 are for filtered data regardless if the regression includes the spread variable or not.

The results of the probit regressions for the adoption of web banking are reported on Table 4. Table 4A reports the results for a minimal specification that includes only assets and delinquent loans as independent variables. Independent variables are for the year 2000. Each column compares two groups of credit unions. In each case, the group of credit unions that was faster in getting a website gets the value of 1. The first column compares credit unions that did not have a website by 2003 (=0) with credit unions that did not have a website in 2000 but reported having a web banking in 2003 (=1). The second column compares credit unions that did not have web banking until 2003 (=0) with credit unions that had web banking in 2000 (=1). The third column compares credit unions that did not have web banking by 2003 (=0) with credit unions that had web banking at 2003 *or before* (=1). The fourth column compares credit unions that did not have a website by 2000 (=0) with credit unions that had web banking in 2000 (=1).

Despite different comparison groups, and the possibility of reverse causation in the final three regressions, the results are quite similar across the regressions. Larger credit unions (in terms of asset size) are more likely to adopt web banking, while credit unions with relative more delinquent loans are less likely to adopt. These results hold up across all comparisons. Non-

adopters tend to have fewer assets than late adopters who tend to have fewer assets than early adopters.

Table 4B repeats the regressions with non-interest expenses and fee income added as independent variables. The coefficient on non-interest expenses is highly significant while the coefficient on fee income is not. Care should be taken in interpreting the coefficient on non-interest expenses as the causation can plausibly go in the reverse direction: credit unions that offer web services may have higher expenses due to the costs of developing the technology. Another factor that needs to be taken into account is that very small credit unions can be subsidized by their sponsoring institution and this reduces their reported expenses. These credit unions are also less likely to adopt new technology. This provides another connection, to the extent that log assets does not capture all of the size effects.

The flip side of the expense relationship is the connection with the interest rate spread. Table 4C reports the regression results when non-interest expenses and fee income are replaced by the interest rate spread. As can be seen, higher interest rate spreads are associated with being more likely to adopt a website. As expected, the coefficient on the interest-rate-spread variable has the same sign as the coefficient on the non-interest-expense variable in the previous panel. The interest-rate-spread variable suggests an interpretation. We can think of credit unions offering a range of services to their customers include good prices (a narrow interest rate spread) and quality (including website access). From these regressions it seems that we would not characterize credit unions as being good or bad – in the sense of offering more or less of both – rather, credit unions tend to substitute. Credit unions that are adopters of new technology and that presumably offer higher quality service, tend to offer worse interest rates.

Table 4D adds an independent variable that measures whether the credit union was an early adopter of PC banking to the specification of Table 4C. Not surprisingly, credit unions that adopt PC technology also tend to adopt websites. This could capture learning-by-doing, if experience with one technology lowers the cost of adopting another technology, or it could be capturing variation due to missing variables that affect the decision to adopt all kinds of technologies. The data seem more in support of the latter explanation as the effect is weakest in the first column. For the regression reported in the first column, none of the credit unions had websites in 2000, and so this should be purely capturing learning-by-doing effects. The magnitude and significance of the coefficient are smallest here.

We can also distinguish between non-adopters and potential adopters. Potential adopters are credit unions without websites, but that would like to have a website in the future. As part of the reporting process, credit unions that do not have a website are asked about their plans for the

future. Their answers to this question are reported on Table 5. In 2000, roughly a third of the credit unions without a website planned to get one in the future. In 2003, this fraction had fallen to a quarter, as a number of the credit unions in 2000 fulfilled their plans to get credit unions.

Did credit unions that planned on getting a website in 2000 actually get one? Table 6 shows what happened. Credit unions are divided into those that planned to get websites in the future and those that did not. They are then further divided into those that actually had a website in 2003, those that didn't and those out of the sample. Interestingly, a substantial number of credit unions that planned on getting a website did not. Self-reported intentions for adopting a website, or other technologies, may not be reliable measures of actual interest.

4. Range of Services Offered

All websites are not equal. Some just provide basic contact information: where to find the bank, its location, hours and phone numbers. Other websites allow the customer to access a variety of banking services. As part of the Call Report, credit unions report the type of website they offer (if offered) as being either (1) Informational, (2) Interactive or (3) Transactional. Table 7 shows the number in each category for the years 2000 and 2003.

Type 2 websites are relatively uncommon, it is more likely for a website to be either informational or transaction. From 2000-2003 there has been a substantial increase in the proportion of websites that are transactional. It seems that over the three-year sample period, not only have more credit unions adopted websites, but the websites themselves have become more sophisticated. Only looking at the number of adopters underestimates the changes in technology.

To see if credit union attributes affect the choice of type of website, an ordered probit regression is performed for credit unions that have adopted the technology. Credit unions that do not have websites are excluded to separate the effect of having a website from the decision about the kind of website to have. Again, asset size is very significant. The larger the credit union, the more likely it is to have a sophisticated website. Delinquent loans are also negatively related to type of website. Finally, the interest rate spread is significant only for the year 2000. Why this is is unclear, perhaps the cost differences across different types of websites had fallen by 2003.

5. Decision to Adopt PC Banking

PC banking is another way to use technology to improve the customer experience and lower bank costs. Table 9 reports the results for regressions evaluating the effect of asset size and

costs on this adoption decision. The categories of credit unions and the structure of the regressions are the same as for the web adoption regressions reported on table 4. The results are very similar to the web adoption regressions. Credit unions with greater assets were more likely to be early adopters and more likely to be late adopters than non-adopters. The primary difference between the two tables is that for evaluating the characteristics of early adopters, adding the variable of being an early adopter of web sites takes away much of the explanatory power of the other variables. These are substitute technologies and, if PC banking was the earlier technology, it may have been easier for credit unions with PC banking to move to web banking.

7. Conclusion

This paper has examined the decision to adopt web and PC banking by credit unions. It finds that larger credit unions are more likely to adopt new technologies, are more likely to adopt earlier and are more likely to offer more advanced versions of the technology. There also seems some evidence of a tradeoff in that credit unions that offer more sophisticated technology are associated with interest rate spreads that are less beneficial for their members.

Credit unions are becoming bigger for a number of reasons, including mergers and the relaxation of the common bond requirement. From the results here, it suggests that the increase in credit union size is likely to result in an increase in the adoption of new technologies. This is likely to be beneficial for consumers, although evidence from this paper also suggests that early adopters of technology may also offer their customers less beneficial interest rate spreads.

References

- Hannan Timothy H. and John M. McDowell, 1984, The determinants of technology adoption: the case of the banking firm, *Rand Journal of Economics* 15, 328-335.
- National Credit Union Administration, 2003, Yearend Call Report.
- Pennings, Johannes M and Farid Harianto, 1992, The Diffusion of Technological Innovation in the Commercial Banking Industry, *Strategic Management Journal* 13, 29-46.
- Frame, W. Scott and Lawrence J. White, 2004, Empirical Studies of Financial Innovation: Lots of Talk, Little Action? *Journal of Economic Literature* 42, 116-144.
- Furst, Karen, William W. Lang and Daniel E. Nolle, 2002, Internet Banking, *Journal of Financial Services Research* 22, 95-123.
- Saloner, Garth and Andrea Shepard, 1995, Adoption of technologies with network effects: an empirical examination of the adoption of automated teller machines. *Rand Journal of Economics* 26, 479-501.
- Sinha, Rajiv K. and Murali Chandrashekar, 1992, A Split Hazard Model for Analyzing the Diffusion of Innovations, *Journal of Marketing Research* 29, 116-127.
- Smith, D.J., 1984, A Theoretic Framework of the Analysis of Credit Union Decision Making, *Journal of Finance* 39, 1155-1168.
- Smith, D.J., 1986, A Test for Variant Objective Functions in Credit Unions, *Applied Economics* 18, 959-970.
- Smith D.J. Cargill T.F., Meyer, R.A., 1981, An Economic Theory of a Credit Union, *Journal of Finance* 36, 519-528.
- Sullivan, Richard J., 2000, How has the Adoption of Internet Banking Affect Performance and Risk in Banks? *Financial Industry Perspectives*, Federal Reserve Bank of Kansas City, 1-16.

Table 1. Number of Credit Unions Using Specific Technologies

Question	2000		2003	
	# Yes	% Yes*	# Yes	% Yes
WWW	2,337	0.26	3,906	0.46
Wireless	170	0.02	253	0.03
Homebanking	1,415	0.19	2,897	0.34
Phone Based	4,290	0.41	4,719	0.55
ATM	4,781	0.46	5,020	0.59

*Number of credit unions responding depends on particular question.

Table 2. Correlations of Technology Adoption (2003)

	WWW	Wireless	PC Banking	Phone Banking
WWW				
Wireless	0.20			
PC Banking	0.61	0.18		
Phone Banking	0.61	0.18	0.52	
ATM	0.56	0.18	0.48	0.68

Table 3. Data Summary

	Mean	Standard Deviation
Total Assets*	5.39	25.0
Delinquent loans	0.021	0.038
Non-Interest Expense	0.038	0.014
Fee Income	0.005	0.006
Spread	5.58	1.36

* in millions

Table 4. Regression results

Table 4A. Basic specification

	Non-Adopter vs Late Adopter	Late Adopter vs. Early Adopter	Non-Adopter vs. Adopter	Non+Late Adopter vs. Early Adopter
Log Assets	0.61*** (0.59)	0.73*** (0.03)	0.87*** (0.02)	.99*** (0.03)
Del Loans	-5.5*** (1.6)	-19.0*** (3.3)	-9.6*** (1.6)	-19.9*** (2.5)
R ²	0.20	0.32	0.47	0.55
N	4079	2741	6040	6040

Table 4B. Non-interest expenses and income added

	Non-Adopter vs Late Adopter	Late Adopter vs. Early Adopter	Non-Adopter vs. Adopter	Non+Late Adopter vs. Early Adopter
Log assets	0.64*** (0.03)	0.78*** (0.03)	0.91*** (0.02)	1.05*** (0.03)
Del loans	-6.2*** (1.6)	-20.2*** (3.3)	-10.9*** (1.6)	-22.5*** (2.6)
Nonintex	13.8*** (2.4)	18.6*** (3.4)	21.3*** (2.3)	25.7*** (2.6)
Fee income	2.4 (4.3)	6.3 (6.7)	1.7 (4.0)	0.07 (4.4)
R ²	0.22	0.32	0.49	0.57
N	4079	2741	6040	6040

Table 4C. Interest rate spread added

	Non-Adopter vs Late Adopter	Late Adopter vs. Early Adopter	Non-Adopter vs. Adopter	Non+Late Adopter vs. Early Adopter
Log Assets	0.61*** (0.03)	0.76*** (0.03)	0.90*** (0.02)	1.02*** (0.03)
Del Loans	-6.3*** (1.6)	-21.4*** (3.3)	-11.3*** (1.6)	-23.0*** (2.6)
Spread	.06*** (0.02)	0.14*** (0.03)	0.11*** (0.02)	0.17*** (0.03)
R ²	0.20	0.31	0.48	0.55
N	4079	2741	6040	6040

Table 4D. Adoption of home PCs added

	Non-Adopter vs Late Adopter	Late Adopter vs. Early Adopter	Non-Adopter vs. Adopter	Non+Late Adopter vs. Early Adopter
Log assets	0.61*** (0.03)	0.63*** (0.04)	0.81*** (0.02)	0.89*** (0.03)
Del loans	-5.9*** (1.6)	-22.8*** (3.8)	-10.0*** (1.7)	-22.5*** (2.9)
Spread	0.06*** (0.02)	0.13*** (0.04)	0.10*** (0.02)	0.15*** (0.03)
Early	0.36* (0.21)	1.42*** (0.11)	1.45*** (0.13)	1.68*** (0.09)
R ²	0.20	0.38	0.50	0.60
N	4026	2567	5841	5841

Standard errors in parenthesis. Significance indicated at 1% (***), 5% (**) and 10% (*) levels.

Table 5. Do you plan to develop a website in the future?
(for credit unions without websites)

	2000	2004
No	4528	3223
Yes	2071	1090

Table 6. Did credit unions make good on their plans?

Response in 2000	Situation in 2003		
	Had website	No web	Out of sample
Plans	667	1,150	96
No Plans	203	2,792	819

Table 7. Type of Website Offered

Type of website	2000	2003
1 – Informational	1732	1427
2 – Interactive	644	360
3 – Transactional	1470	3388

Table 8. Factors affecting type of website offered

	Adopters in 2000	Adopters in 2003
Log(Assets)	0.51*** 0.02	0.54*** 0.02
Del Loans	-14.3*** 2.5	-6.2*** 1.4
Spread	0.12*** 0.02	.005 .016
R ²	0.14	0.17
N	3843	5173

Standard errors in parenthesis. Significance indicated at 1% (***), 5% (**) and 10% (*) levels.

Table 9. PC Banking

Table 9A. Base specification

	Non-Adopter vs Late Adopter	Late Adopter vs. Early Adopter	Non-Adopter vs. Adopter	Non+Late Adopter vs. Early Adopter
Log Assets	0.48*** (0.02)	0.46*** (0.03)	0.63*** (0.02)	0.61*** (0.02)
Del Loans	-9.2*** (1.8)	-6.1* (3.6)	-10.5*** (1.7)	-10.6*** (2.6)
R ²	0.22	0.14	0.39	0.36
N	4997	2131	6083	6083

Table 9B. Non-interest expenses and income added

	Non-Adopter vs Late Adopter	Late Adopter vs. Early Adopter	Non-Adopter vs. Adopter	Non+Late Adopter vs. Early Adopter
Log assets	0.50*** (0.02)	0.48*** (0.03)	0.64*** (0.02)	0.63*** (0.02)
Del loans	-10.0*** (1.8)	-7.9** (3.7)	-11.7*** (1.8)	-12.5*** (2.7)
Nonintex	10.4*** (2.4)	11.6*** (4.2)	13.8*** (2.2)	14.9*** (2.8)
Fee income	7.4* (4.1)	3.2 (7.3)	7.2* (3.8)	-3.0 (4.5)
R ²	0.23	0.15	0.37	0.37
N	4997	2131	6083	6083

Table 9C. Interest rate spread added

	Non-Adopter vs Late Adopter	Late Adopter vs. Early Adopter	Non-Adopter vs. Adopter	Non+Late Adopter vs. Early Adopter
Log Assets	0.49*** (0.02)	0.47*** (0.03)	0.64*** (0.02)	0.62*** (0.02)
Del Loans	-10.1*** (1.8)	-8.0** (3.7)	-11.8*** (1.7)	-12.4*** (2.7)
Spread	0.058?? (0.022)	0.085** (0.035)	0.08*** (0.02)	0.093*** (0.026)
R ²	0.22	0.15	0.36	0.36
N	4997	2131	6080	6080

Table 9D. Adoption of web added

	Non-Adopter vs Late Adopter	Late Adopter vs. Early Adopter	Non-Adopter vs. Adopter	Non+Late Adopter vs. Early Adopter
Log assets	0.40*** (0.02)	0.31*** (0.03)	0.44*** (0.02)	0.35*** (0.03)
Del loans	-9.1*** (1.8)	-1.4 (4.6)	-8.9*** (1.8)	-4.4 (3.5)
Nonintex	0.047** (0.022)	0.023 (0.041)	0.045** (0.021)	0.021 (0.033)
Early	0.45*** (0.06)	1.40*** (0.10)	0.90*** (0.06)	1.59*** (0.08)
R ²	0.24	0.26	0.40	0.48
N	4899	1945	5841	5841

Standard errors in parenthesis. Significance indicated at 1% (***), 5% (**) and 10% (*) levels.