A look back at online banking in 1997 (Archive).

Future of Banking: From September 1994 to July 1996 the number of banks on the Internet grew from 20 to 1,178. By May 1997 the number was over 2000, growing at around 350 - 400 every quarter. A large survey of European banks found that 56% of those with web sites were planning to provide full on-line net banking by the end of 1997. As a result, there is a shortage of skilled web programmers in Europe, especially those able to integrate financial legacy systems with the new technology.

From October 1996 to March 1997 the number of financial institutions offering full Internet transactions leapt from around 15 to over 70. Traditional banks are struggling to keep up with non-banking competitors who are are intent on grabbing market share. Unlike traditional banks, they have no culture to fight and are able to move fast. The stampede onto the net is gathering pace with an explosion of alliances between banks, food retailers, insurance companies, software houses, media companies and internet service providers. Security problems are easing.

Internet life measured in dog years

The net ages at seven times normal speed so a corporate decision making process at twice normal speed still leaves a large company stranded with out of date decisions. Every step forward is three steps further behind the front runners.

The most dramatic changes are being seen not in retail banking but in share trading with discount brokers now offering unlimited trades for $12 or less - a saving on large deals of over $3,000. At that level the tiny commission is hardly worth collecting so the next step is to charge nothing at all. The bottom is about to fall out the conventional brokerage market which has been built on free advice but expensive trades. Now that trades are virtually free, brokers are going to have to think again. Either they continue to provide free advice at a huge loss, cross-subsidised by encouraging other business, or they stop giving advice. The only alternative is to carry on and hope for the best, assuming that many clients will still pay a premium for reliable service.

However, 1.5 million people are already selling and buying stock on their PCs, increasing at 100,000 a month. Commissions are so low that it is easier to make money on multiple trades of the same shares over a short period. Most net users have free access to current market prices,

delayed only by thirty minutes which is fine for many people. Punters can play the game both ways: phoning a broker for advice and doing an occasional trade to keep the firm happy, while carrying out most trades on the Internet. We may argue about the percentage of the market which will run through the net by when but the trends are clear: the days of large commissions are over.

The uptake of online retail banking is slow with some exceptions such as Wells Fargo, topping 200,000 net accounts in early 1997. Most banks are growing net accounts by cannibalising existing client bases who had been using direct dial PC banking. The drive onto the net continues, fuelled by the low costs (1% of normal traditional routes per on-line banking transaction). Security issues were solved a year ago though many banks are still catching up. The latest announcement by the US government (May 1997) will help by easing export restrictions on strong encryption for banking security.

Global marketing

It is a tough world, with net users able to find global comparisons on interest rates, insurance premiums, and other products in a matter of seconds.

The days of "virtual banking" are here already with banks whose only presence is on the Internet. Customer interfaces in the future will need to be global brokers for best-price deals whether of loans, insurance and other products. The role of humans will be to provide trustworthy advice and guidance through the mass of data available, enabling people to buy on quality of service rather than just cost.

Branding of banking products will be essential to survive. Price Waterhouse said recently: "Banks will need to think of themselves as fast-moving consumer goods retailers." However the role of humans as consultants may also be threatened by new "intelligent agents" on the net. These programs are trained to recognise consumer preferences and to anticipate their next requests. They can hunt around the net searching for better financial deals, for example. They will also help retailers so that - say - someone who buys a set of golf clubs yesterday, is offered a golfing holiday when connecting today.

Collaborative filtering using Firefly Network and similar products also allows preferences to be guessed by the agent after analysis of the behaviour patterns of thousands of other people with similar profiles of net activity. "Push" technology is also a major threat, with relevant information arriving at the PC without action taken by the user. The net of the future will be dominated by

advertising on the back of free information and entertainment. One click to a product, two clicks to a sale.

How many are Home Banking?

Estimates vary for the numbers using home banking options today. Diogo Teixeira, President of Tower Group, Texas, believes it could be as high as 15 million in the US. This is a sixfold increase in just twelve months. However it is still less than 1% of all customers. Jupiter places the figure lower, at 700,000, but estimates that 75% of all US homes will be running their accounts on-line, rising to 95% by 2010. This is partly aided by the provision of free local calls by Telecom providers in most states. Huge numbers access PC banking via programmes such as Quicken, through intermediary servers. This allows people to find a house loan from one bank, and a car loan or insurance deal from another. Banks could turn into little more than wholesalers of financial services.

Saloman Brothers (Wall Street) said recently: "This may not sever an institution's ties with its retail customer base, but weaken the ties, onshore brand value and steal much of the remaining profits." Customers will have a far stronger relationship with a personal finance program than with a single bank. Intuit, owner of Quicken, has been swamped by banking transactions and on 17 September agreed to sell its on-line banking and bill paying service to CheckFree for $227.6 million. Assuming the sale proceeds, CheckFree will provide home banking and bill payment to 180 financial institutions and to more than a million customers. CheckFree and Visa Interactive are thus the two leading processors in the US. Intuit retains a 23% stake in CheckFree.

US export ban on strong encryption collapses (May 1997)

The US government ban on 128 bit SSL encryption export is over - for financial services. The position was unsustainable and will be welcomed by financial institutions world-wide. However the ruling does not apply yet to web browsers. Most experts accept 128 bit SSL encryption as secure enough for international banking. However, SSL only encodes the transmissions between two computers. It does not guarantee the identity of the individual or of the bank.

Meanwhile the British government has announced (May 1997) plans for possible legislation allowing it to access any encrypted messages using a third party key. Banks will vigorously oppose such measures.

Security on the net is a boom industry with hundreds of products and companies. However

there are just three issues when it comes to on-line banking security:

- Confidentiality - is the line secure from listeners?
- Authentication - is the computer really part of the bank? Is the other computer really owned by the customer?
- Identification - is the user of the customer's computer really the customer ?

However we also need to ask how secure other banking systems are before demanding an overly expensive and inconvenient solution for on-line systems. Systems available today offer security many factors greater than that obtained with normal telephone instructions, fax or e-mail. A US survey shows that most people are more worried about personal details becoming public than about actual fraud.

Methods of Encryption

Until recently all methods of encryption involved both parties using the same key. These systems are called private key or symmetric systems. The best methods (algorithms) are ones that preserve security even if the actual method of encoding is revealed. Symmetric systems are fast but key management is difficult. A bank computer has to use a different key to communicate with every client. There is also a problem in distributing such keys in a secure way on a regular basis. Asymmetric keys overcome these problems. Each key is in two parts: the public and the private. Anyone wishing to send a message can use the public key to code, but it can only be decoded with the private key. However the system is slower. It relies on "one way function" in mathematics. This is a calculation which is easy to perform in one direction but takes an extremely long time to reverse.

A "trapdoor function" is one where reversal of a "one way function" is easy if you know another piece of information. Public key systems are all based on trapdoor one way functions. The larger the key, the greater the security. However it is impossible to prove mathematically that the trapdoor is indeed one way only. One can only say that it is highly unlikely. It is possible that a new algorithm may be invented one day to open the door. The key is a very large number, typically the factor of an even larger prime number. Prime factoring involves splitting a large number (integer) into two prime numbers. Multiplying two primes is easy, finding them is hard.