Feb - April 06 / Vol 01 / Issue 05

FINACLE CONNECT

ANNIVERSARY ISSUE

CONNECTING THE BANKING WORLD

Cover Story
The Next Wave of Internet Banking

Internet Banking
Anytime. Anywhere.

Inside Talk
Interview
Jim Smith & Danny Peltz
Wells Fargo

INDUSTRY ROUND TABLE
Internet Banking Experts View Point

Kaleidoscope
Phishing
Catch Me If You Can

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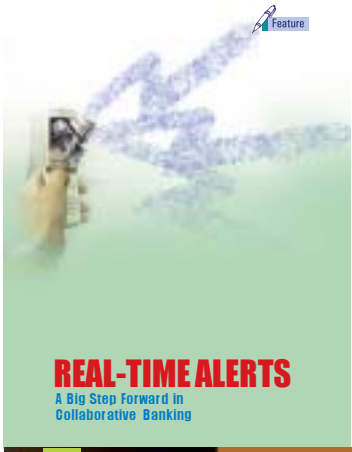
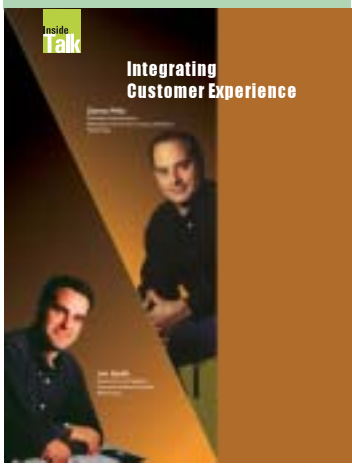
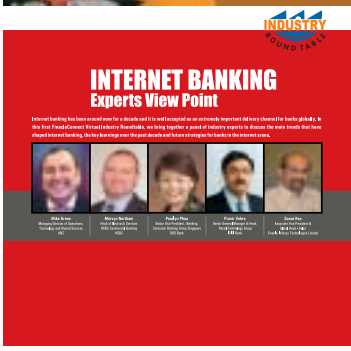
Contents

Feb - April 06 / Vol 01 / Issue 05







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Voice from the Desk

Internet Banking The Next Wave

Welcome to the Anniversary Issue of FinacleConnect! We have completed one year of our quarterly journal and it has been an extremely interesting journey. Our aim all along has been to provide you with an in-depth insight into relevant topics that are impacting the banking industry - not only from our team of in-house experts but also from the most important constituent of the FinacleConnect community, bankers. In this issue Jim Smith, Executive Vice President, Consumer Internet Channel and Danny Peltz, Executive Vice President, Wholesale Internet and Treasury Solutions at Wells Fargo, explain the key drivers and challenges behind the bank's Internet strategy. Wells Fargo is the 5th largest bank in the US, and an Internet banking pioneer. It was the first bank in the US to adopt Internet banking. Both Smith and Peltz have spent well over a decade at Wells Fargo and seen the bank's offerings grow from the first web site to the current multi-product, multi-platform strategic solution for both retail and corporate customers.

As you may have guessed, the theme for this issue is Internet banking. Why Internet banking, you might ask. Well, for starters, the Internet banking industry celebrated its 10th anniversary last year. And secondly, we believe that the industry is witnessing one of the most exciting phases of Internet banking. The Internet is well established as a key delivery channel for banks & new technologies are ensuring that banks can now provide a unique customer proposition through the Internet. In the Cover Story we talk about how with the sea-change in customer Internet habits and Internet technologies over the past decade, banks now need to re-look at their internet banking platforms. They need a future-ready solution that can enable them to offer banking functions and services that are uniquely suited to today's online audience. Services such as 'alerts'. As the name suggests, alerts are essentially notifications or messages, which are sent to customers on the occurrence of a specific event such as a bank balance reaching a certain limit. The Feature Article, Real-Time Alerts discusses the importance of alerting technology to banks in their effort to cost-effectively meet customer requirements.

In Kaleidoscope we discuss the malaise of 'phishing' attacks and how banks need to use customer education and technology to protect themselves. Undoubtedly, security remains one of the biggest concerns for banks in the online world, a fact which was reinforced in our Internet Banking Industry Roundtable. Industry Roundtable is a new addition to FinacleConnect's regular list of features where we bring together leading banking experts from around the globe to discuss key issues and trends impacting the banking industry. In our maiden round table discussion, we have panelists from DBS Bank in Singapore, ANZ in Australia, ICICI Bank in India, HSBC in the UK and Finacle providing a technologist perspective.

I am sure you will enjoy this issue and look forward to your comments and feedback.

Wish you a very Happy 2006!

Till next time.

Merwin Fernandes
Vice President and Business Head - Finacle
Infosys Technologies Ltd.

REAL-TIME ALERTS

A Big Step Forward in Collaborative Banking

Customers can now easily keep a tab on all aspects of their account relationship with the bank with the invent and implementation of real-time alerts.

My mobile phone rang yet again. "Mr. Rao?" and before I could answer, the sweet voice at the other end went on "Mr. Rao, this is Shelley from ABC Bank. Mr. Rao, how are you? I know you must be very busy but I wanted you to be amongst the first to know that we have launched this great offer only for special customers like you. It offers you a combination of ….." Her voice trailed in the distance as I had already mentally switched off.

It was one of the best holidays that one could ask for. The weather gods were kind to us, the food was great, the tour guide was a walking repository of knowledge with a great sense of humor, and the group from 9 different nationalities gelled well. Looking back, though, if there was one minor irritant, it was the fact that my friendly neighborhood bank was particularly insensitive and possibly a bit too friendly. I had lost count of the number of times I received a call on my mobile and the person at the other end invariably took pains to let me know how glad they were to have me as their customer, and how they are always striving to meet their customer's requirements etc. That was the last thing I wanted to be told over and over again while on a holiday. To make matters worse, invariably, the calls would be followed by text messages on my mobile.

But all this is now history.

The "Wired" Consumer

We all remember the times when we read the day's newspaper and then waited for the following day's newspaper for more information on events. Fortunately today, in the age of the Internet, we can access the Web and get to-the-minute updates of events as they unfold anywhere across the globe. What about the giant strides that television broadcasting has taken, particularly in the area of sports coverage? The action on the field is captured by different cameras from all angles possible, and then replays are shown instantaneously, so that viewers (and in some sports third umpires too) can judge for themselves.

This is the age of the wired consumer, one who demands, and gets, information 'here and now'. Technology has obviously played a very big role in ensuring this. However, it has not all been easy. With a proliferation of channels, and an increasing trend of customers getting more comfortable with the electronic channels, the challenge before banks really has been to ensure that multi-channel integration 'really' takes place and this, in turn, goes to ensure that the customer's experience is a more fulfilling one.

"Alerts traditionally used to be delivered by email, now the trend clearly is towards a multi-channel delivery mechanism."

Among the many different technologies that are contributing to this, one such is that of alerts. As the name suggests, these are essentially notifications or messages, which are sent to customers on the happening of a certain event. The alerts are delivered across a wide variety of channels and devices including email, mobile phones, PDAs, fax etc. Alerting technology is still fairly nascent in adoption by banks, but one that is clearly expected to grow strongly, particularly as customers realize that it allows them to exercise a lot of control in their interaction with banks.

Drivers for Implementing Alerts

We have all extensively dealt with banks. And we know from our own experiences that traditionally the relationship has been based on a "customer-asks, bank responds" model. Customers may 'ask' in a variety of ways, when they visit their branch, when they speak with the agent at the call center or when they send an email query. And for their part, banks also then respond across a variety of channels. However, alerting technology promises to take this interaction to an altogether different level.

The fundamental difference arises from the fact that the customer enjoys the control of determining when she would like to receive what kind of an alert and through which medium. In doing so, customers would be expected to make a distinction between 'call-to-action' alerts and 'just-for-information' alerts. For example, every month the customer will expect to be notified once her salary has been credited to her account. This is a typically routine "for your information" alert. However, if the customer is planning to sell some stock above a particular price point, then the brokerage department would alert the customer as soon as the stock hits that particular price, so that the customer can take instantaneous action.

Another significant difference is the fact that while alerts traditionally used to be delivered by email, now the trend clearly is towards a multi-channel delivery mechanism. In fact, going by the progress that technology is making, experts clearly believe that in the near future, emails will give way to those alerts, which are voice based and delivered in an automated manner through mobile phones and a variety of other handheld computing devices, which are coming into the market.

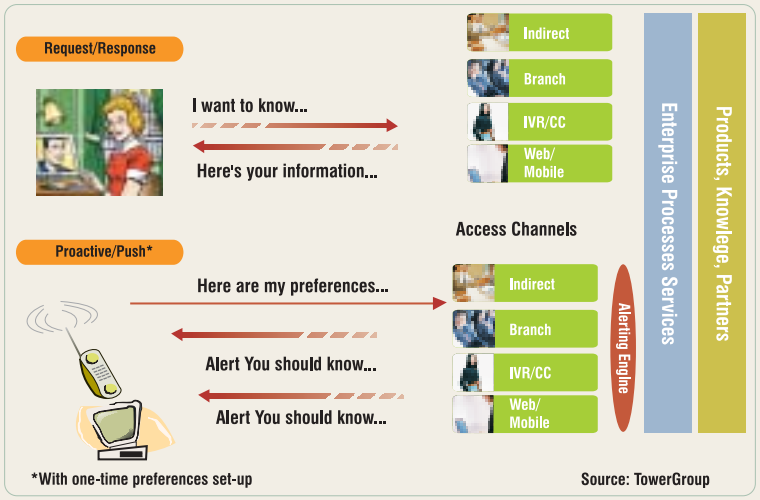
From the bank's point of view, this offers them a great opportunity—to focus on the sales and service aspect of a customer relationship. The impact that it leaves in the area of customer service is obvious. Customers are now easily able to keep in close touch with all aspects of their account relationship with the bank, be it crediting of salary to the account, to change of

"Banks should not stop at just sending alerts 'for information sake'. The challenge is to really bring in some form of intelligence in the alerting system, so that the interaction with the customer becomes more meaningful."

interest rates, to credits / debits above a customer-specified threshold etc. From the point of view of the bank, this offers them a much cheaper option of servicing the customer than the more commonly used agent-based model. Gartner estimates that by proactively conveying information to customers, an alert costing less than USD 0.50 can preempt an inbound call to the call center, which would cost the bank upwards of USD 4.50.

However, alerts also have much to offer in the area of sales. Outbound marketing alerts on product promotions and product changes can go a long way in increasing customer stickiness. This can vary from information of the type that TowerGroup refers to as "highly perishable and on which customers must act quickly" such as changes in existing interest rates to the launch of a new product with a time-bound attractive offer. It must be recognized however, that agent-based mass outbound marketing is a highly expensive proposition and therefore banks would do well to integrate their alert technologies with tools for customer analytics and modeling.

Fig. 1: Automated Alerting Moves FSIS from Request/Response to Proactive Service Model



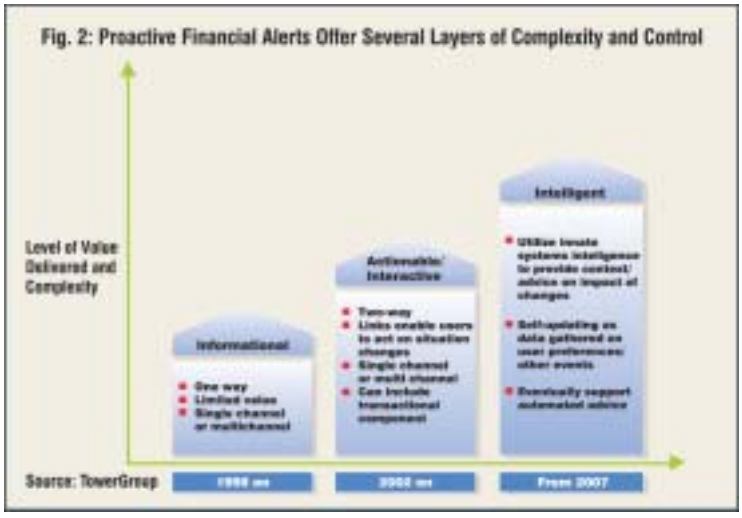
What is clear, though, is that if alerting technology is to really take off, then it necessarily needs to support a multi-channel delivery mechanism. And only then will this move from a "customer-asks, bank responds" model to a more proactive customer service model, as demonstrated in Fig 1.

A word of caution, though–irrespective of whether the alert is related to account servicing or is marketing and sales oriented, it should only be sent to customers who opt for it. Otherwise, it can be a major irritant to the customer.

What Next?

The convergence of technologies offers alerts great hope, even though its initial take-off amongst the large banks in North America and elsewhere has been slow. However, banks need to pay attention to a few issues:

- Even amongst those banks, which have introduced alerts, its utilization amongst customers has not been very high, largely because banks have not fully understood and delivered information of the type and form that customers find very friendly.
- Banks should not stop at just sending alerts 'for information sake'. The challenge is to really bring in some form of intelligence in the alerting system, so that the interaction with the customer becomes more meaningful. Figure 2 highlights the way to go:
- While selecting the type of alerting technology that they wish to deploy, banks should be cognizant of the fact that it makes deployment considerably simpler if preferably a single solution can take care of the need to deliver across all channels and devices. The solution should be capable of supporting multiple network protocols and customizing messages to customers based on the devices that have been identified by the customer as preferred ones for delivery of different types of messages.



- The potential and power of alerting technology will be considerably diluted if the solution is not fully integrated with the rest of the technology infrastructure within the bank. This includes the various legacy applications that reside in different parts of the bank, the Internet banking application, the CRM system, the call center and IVR applications and other pieces of collaborative technologies such as text chat and co-browsing. The alert solution inherently relies on customer data and integrity of all types of customer information.

- Banks need to approach the deployment of alerting solutions with a conscious multi-channel strategy and a strong business case to justify its investment. If banks get their act right in this respect, then it certainly provides an opportunity to be competitively different while at the same time provide a positive ROI based on substantially lower cost-to-serve. On the revenue side too, through targeted outbound marketing, there is an opportunity for banks to substantially increase sales.

Conclusion

Alerting technology offers banks another opportunity to take a giant, but cost-effective step in refining their customer relationship management strategy. In fact, with the investment that vendors are making in this area, future versions of the solutions will focus extensively on customer demographics and customer lifestyles, which will allow the banks to make changes to alerts and their content based on more dynamic changing of the customer situation.

My bank's alert solution now has a "Do Not Disturb" feature which allows me to go to their website and specify only those kinds of alerts that I want when I am on holiday. I am about to reach out to access that feature as soon as I write this piece-in fact, as you read this, I will be on another holiday, to a different part of the world this time, but secure in the knowledge that I shall not be unnecessarily disturbed■

Sanat Rao
Associate Vice President &
Global Head - Sales
Finacle, Infosys Technologies Ltd.

The Next Wave of Internet Banking

To meet the challenge of creating an effective online banking service offering that meets the requirements of a sophisticated customer and is also secure, robust and future-proof, banks need to re-evaluate their existing platforms and harness new-age technology.

Online banking, which recently celebrated its 10th anniversary, has come a long way over the past decade. Having experienced both the highs of the halcyon days of the dotcom boom era when banking over the Internet was lauded as the break-through development destined to replace brick-and-mortar branches, and the subsequent lows of the immediate post-dotcom period when it was often accused of having reneged on its initial promise of providing low-cost convenient banking, online banking has finally matured in recent years. Along with the ATM and phone, the Internet is now regarded an integral constituent in the mix of delivery channels offered by most banks worldwide. More importantly, banks have realised that the Internet offers a unique value proposition. Not only does the Internet attract a certain profile of users, urban educated banking customers that the bank can target for its cross-selling and marketing purposes, there are certain banking functions and services that are best suited to an online audience that, in turn, can generate immense profits for banks. Banks, however, are increasingly being faced with the challenge of creating an effective online banking service offering that consistently meets the requirements of their sophisticated customer base and is also secure, robust and future-proof.

"In the dynamic Internet world, it is imperative for banks to understand changing technologies and customer preferences, and accordingly upgrade their solution."

The Power of the Internet

The Internet has entered mainstream consciousness over the past decade. Statistics indicate that worldwide Internet usage has nearly tripled since 2000. Although only an estimated 15 percent of the world's population is online today, the corresponding figure for regions with a developed infrastructure is much higher. For instance, in countries like North America, UK, Sweden, Hong Kong and South Korea, the Internet penetration levels are over 60 percent. Not surprisingly, the level of Internet banking activity is high as well in these countries.

A survey conducted by the Pew Internet & American Life Project, which produces reports that explore the impact of the Internet on day-to-day life, revealed that of all the major Internet activities, including buying books and travel tickets, banking has been growing the fastest in the US over the last five years. Fifty-three million Americans, or 44 percent of all Internet users in the US, now do at least some of their banking online, a 47 percent jump over 2002 levels. The survey found that the spread of online banking coincides with the spread of high-speed broadband connections and the increasing maturity of the Internet population. Sixty-three percent of those with broadband at home have tried online banking, compared with 32 percent of those with dial-up connections. Further, the survey reveals that online banking, like many other Internet activities, is most likely to be performed by those living in well-off households (households with more than $75,000 income), those who have college and graduate degrees, and those who live in suburbs.

The growing adoption of online banking is sweet music for banks that have invested in the online channel in the hope of reaping the benefits of this new age delivery channel. A comprehensive online banking service increases customer 'stickiness' or customer loyalty, the all important success parameter for banks worldwide. A recent survey of US online banking customers by ForeSee Results, an online customer satisfaction firm, in association with forbes.com concluded that the satisfaction level of online banking customers is 5.5 percent more than banking customers in general. As a corollary, they are, therefore, less likely to leave the bank. Another survey by analyst firm, Forrester Research, of Canadian online households too indicates that online banking users are less likely to switch their account provider than their offline counterparts.

UK-based banking group, Alliance & Leicester, has found that online customers enable higher operational efficiencies and reduced costs. In August last year the bank reported that 35 percent of all sales of its four main products were

generated over the Internet in the first six months of 2005, compared to 20 percent in 2004. The bank added that this increase in customers banking online and through other self-service channels was helping bring 2005 operating expense below 2004 expense levels.

Probably one of the most rigorous analysis of the benefits of online banking was done in a study carried out by Bank of America, the second largest bank in the US, which has the highest number of active online banking subscribers in the country. Starting from late 1998, for a period of 31 months, the bank tracked a mix of over 300,000 online and offline customers with similar demographic and transaction usage characteristics. A statistical analysis of the data offered startling insights. Customers who both bank and pay bills online turned out to be 21 percent more profitable than offline customers.

Equipped with such statistical and anecdotal evidence of the benefits of online banking, banks around the world have charged ahead with creating online programs.

But have they all been successful? Not really, say industry experts and participants. While a handful of banks have successfully exploited the benefits of the Internet and achieved a high level of penetration, such as Bank of America (over half its customer base, 14.2 million customers, is online), Wells Fargo (again, over half its customer base, 7.2 million customers, is online) and ING Direct (the largest Internet-only bank in the world with over 13 million customers globally), several others are still struggling to make an impact.

Ensuring Customer Adoption

Alenka Grealish, Senior Analyst at research firm Celent, says that till date strong adoption rates of online banking have been achieved mostly by banks that were early movers and have continued to be committed to improving online bank-

ing. For example, in the US, banks that launched their online banking service in 1996 have achieved an average penetration of 31 percent (active online banking end-users), almost twice that of those launched in 1998 and four times that of those launched in 2003.

No doubt early mover advantage is useful, but what is of greater importance in the above statement by Grealish is that leading Internet banks have maintained an ongoing commitment to improve their online banking offering. In the dynamic Internet world, it is imperative for banks to understand changing technologies and customer preferences, and accordingly upgrade their solution.

"Over the past five years, banks have learned-often the hard way-that they cannot merely build online banking and expect customers to come. Rather, banks must put in place three pillars to assure strong adoption: technology-driven improvements, call center and other remote support, and branch support," states Grealish.

"An intuitive GUI is essential for the online banking solution; the number of clicks needs to be reduced and user interface needs to be customer friendly."

State-of-the-art Internet Banking Platform

"The importance of best practices is evident in the disparity in adoption rates between leading and average banks," says Grealish. Commenting on the US market, she says that although all large and mid-sized banks and a growing number of small banks offer online banking, their offerings are far from equal. User-friendliness is uneven, support varies, and features menu differ notably. Big gaps still exist with many small banks not yet offering online service and funds transfer capabilities.

So, what are the essential attributes of an Internet banking solution?

Robustness and scalability are basic features of any online banking service. The Internet banking solution needs to be able to manage the growing online customer base and ensure that the performance of the application does not slow down. Security too is extremely important. With the growth of various phishing scams and online frauds, security is often ranked as the number one concern of online customers (refer Kaleidoscope on page 19) and the online banking solution needs to ensure the highest degree of security.

Interoperability is another critical requirement that uniquely reflects the growing scope and depth of the Internet channel. With banks increasingly offering a complete breadth of activities online, the online banking application needs to be able to seamlessly integrate with a host of different applications including the core banking application. For instance, Wells Fargo has created an online portal (refer Wells Fargo interview in Inside Talk on page 16) that acts as a single point of entry for all financial services for corporate clients including international, investment, trust, purchasing and credit services. The online banking solution at Wells Fargo therefore interfaces with over 50 disparate internal applications and data sources.

Interoperability also comes into play when banks wish to enable multi-channel integration and offer features like alerts where customers can subscribe and receive alerts on multiple channels such as e-mail, SMS, voice, fax and Internet. To ensure the high levels of interoperability demanded now and, in the future, the Internet banking application should be able to incorporate a Services Oriented Architecture (SOA) approach.

Further, the online banking platform needs to support the increasing variety of features menu that banks need to be able to support. Banks have till date mostly focused on core functions like account access, account history, and standing instructions, with features like bill payment and funds transfer being projected as value added features. But in the past 24 months, with the

proliferation of broadband there has been a growing acknowledgement of the need to design services especially for the online channel. This has heralded a new era in Internet banking where features like real-time alerts (refer Feature section on page 5), personal finance calculator and online customer support are much sought after. This list will only grow in the future with emerging capabilities like instant account opening being developed to woo the online customer.

Last, but certainly not the least, an intuitive GUI is essential for the online banking solution. The number of clicks needs to be reduced and user interface needs to be customer friendly. George Tubin, Analyst at TowerGroup explains, "Having a rich interface for the online banking service is essential today because the competition here is no longer between banks, but with the likes of eBay and Amazon. Banks need to understand that today most customers are extremely Internet savvy and they demand a similar level of intuitiveness from their banking website that they experience at other websites."

Gearing Up

Banks around the world are realizing that new-age technology is required to satisfactorily meet the needs of the new-age customer. In response, a few leading banks around the world have already started evaluating and replacing their existing platforms.

In 2004, DBS Bank in Singapore replaced its online solution that was deployed way back in 1997, citing outdated technology as the reason. "Our customers expect the online channel to be able to meet their changing needs and preferences, with optimal online capabilities, speedy access and high performance," stated the erstwhile Managing Director at DBS, Eddie Khoo. Recently, Wachovia, the fourth largest bank holding company in the US too overhauled its existing online banking and billpay platform to provide a service offering simpler and swifter navigation and seamless integration of various money management functions.

Another leading bank, ANZ in Australia too is in the process of replacing its first generation Internet banking solution which was deployed way back in 1998. The bank was looking for enhanced functionality, such as, higher level of security and features for small business customers to enable them to process more complex internet banking transactions, which was not possible with the existing solution explains Mike Grime, Managing Director of Operations, Technology and Shared Services as ANZ. "We wanted a powerful, future-proof solution to replace the incumbent system," says Grime.

When the first wave of Internet banking hit the traditional brick and mortar banking shores, banks had a very basic understanding of the Internet space. Since then, the bank customers have matured and so have banks themselves. The past ten years have seen Internet banking platforms evolve from a basic solution with extremely limited features to a sophisticated offering that provides a full suite of banking services. However, in the Internet domain, the pace of change is very fast, and technology evolves continuously so that sometimes even within 3 years a solution can be considered 'legacy'. In such an environment, it is important for banks to regularly reassess their current platforms and deploy a solution that is not only in synch with current developments but one that is constantly thinking ahead and understands future issues as well – a solution that is truly based on the 'next' wave of internet banking. Only then can banks truly exploit the full potential of the Internet■

Merwin Fernandes
Vice President and Business Head - Finacle
Infosys Technologies Ltd.

Inside Talk

Integrating Customer Experience

Danny Peltz
Executive Vice President
Wholesale Internet and Treasury Solutions
Wells Fargo

Jim Smith
Executive Vice President,
Consumer Internet Channel
Wells Fargo

If there was an award constituted for a pioneer in the world of Internet banking, Wells Fargo, the 5th largest bank in the US, would be a strong contender. Not only was Wells Fargo the first bank in the US to launch an internet banking service for its retail customers way back in 1995, it was also the first to offer banking services over the internet to its corporate clients five years later, in 2000. Over the years Wells Fargo has consistently maintained its lead and currently with over 50 percent of it's retail customer base (~ 7.2 million active online retail customers) and 2/3rd of its corporate customers using the Commercial Electronic Office, the bank has established itself globally among the top Internet banks. Forbes selected wellsfargo.com in its Best of the Web in its Spring 2005 issue and Internet research firm, Watchfire® GomezPro™ ranked Wells Fargo number one in its Q3 2005 rankings of top US Internet banks that is based on the features that consumers find most important. The bank was also recognized in Global Finance', list of the world's best Internet banks in 2005 with the magazine lauding Wells Fargo for the best Website design, the best integrated consumer bank site and for being the best corporate internet bank in the US.

Rekha Menon, research and contributing editor at FinacleConnect talks to Jim Smith, Executive Vice President, Consumer Internet Channel and Danny Peltz, Executive Vice President, Wholesale Internet and Treasury Solutions at Wells Fargo to understand the key drivers and challenges behind the bank's Internet strategy. Both Smith and Peltz have spent well over a decade at Wells Fargo and seen the bank's offerings grow from the first web site to the current multi-product, multi-platform strategic solution for both retail and corporate customers.

Smith has been involved with Wells Fargo's Internet initiatives since their inception in 1994 and is currently responsible for developing consumer Internet product strategy, managing the Internet channel and platforms, building consumer Internet payment businesses, and managing Internet development projects.

Peltz on the other hand, leads the development and ongoing management of the bank's award-winning Commercial Electronic Office® (CEO®) online business portal – a single point of entry for all financial services including international, investment, trust, purchasing and credit services. He also heads Wells Fargo's Treasury Management Product team.

Q **Wells Fargo has been a leader in the Internet banking space over the past decade. What were the key drivers for the bank investing in the Internet way back in 1995?**

A **Jim Smith:** At the beginning, Wells Fargo focused on the consumer internet banking service as another channel for enhanced customer convenience. The aim was to enhance the value for our customers, by offering them another channel – along with store, phone and ATM -- to reach the bank. In the process, the bank gained as well, since we realised very early on that the online customer was more likely to stay with us and buy more products from us. Essentially, the Internet offered a powerful value proposition to our customers ensuring that they maintained an enduring relationship with the bank, which was a powerful motivator for Wells Fargo to focus on the online channel.

Q **What key benefits has Wells Fargo achieved through its Internet banking service?**

A **Jim Smith:** Last year, Wells Fargo celebrated its 10th anniversary as the nation's first financial institution to provide online access to banking accounts. Over half our retail customers are online and the online channel at Wells Fargo is now the most heavily used channel, outpacing stores, ATMs and phones. The number of monthly online sessions, averaging 50 million in Q1 2005, outpaces monthly transactions of branch/store deposits and withdrawals, phone or ATM. Through our Internet banking service we have managed to transform many business processes from days to hours or minutes for our customers. For instance, statements and tax documents which took 3 days to view are now available immediately. Check copies can be accessed immediately whereas it took anytime between 1 to 10 days earlier, and credit decisioning, which took 2 to 3 days earlier, now happens in a mere 2 minutes.

A **Danny Peltz:** The advent of the commercial Internet has transformed the way business is conducted at the most basic level. Ten years ago, transactions involved multiple calls to the bank, paper-based reports and often the frustration of dealing with finicky dial-up software. Customers had to rely on their servicing agents to do everything for them. Today our corporate customers use our Commercial Electronic OfficeÒ (CEOÒ) portal, the bank's single sign-on to all its commercial services, to conduct all their financial transactions online - whether making/collecting payments, trading internationally, managing investments, exchanging currencies or monitoring for fraud – it's all performed instantaneously online. The Internet has transformed business in so many ways. Beyond the ability to now make immediate decisions and conduct transactions 24/7 the internet actually allows us to take our customer relationships to a much deeper level as it frees up time to focus on the more complex and strategic needs.

Q **How would you describe Wells Fargo's Internet banking strategy? Is the Internet just another delivery channel or does it occupy a unique position?**

A **Danny Peltz:** It's both. The personal relationship between the banker and customer will never go away. But the real-time information and transactional capabilities provided by the Internet takes that relationship to a new level as more time can be spent proactively to find ways to increase efficiency, optimize their operations and grow their business.

A **Jim Smith:** But it is also important to note that our strategy is about giving customers a choice in how they want to bank with us for we believe that the winners will be those who can deliver on the promise of anywhere, anytime accessibility and enhanced service, convenience and advice. We recognize that it is the synergy between our various delivery channels that has made Wells Fargo so successful and we are focused on aligning and coordinating our channels to provide the very best customer service. For example, we're the first bank to web-enable our ATMs and put online stations in all of our banking stores this year.

Q **Please describe the evolution of Wells Fargo's consumer and corporate internet banking service.**

A **Jim Smith:** On the consumer banking front, the first 10 years of internet banking was all about putting the systems and infrastructure in place to get things up and running. Interestingly, it took us 4 years to get to our 1st million customers between 1995 and 1999. The next six years brought us more than six million additional new customers. In the early days, Wells Fargo was probably the only bank to offer an integrated view of all consumer banking applications under a single user name and password. Over the years we have added key features like online bill payments and email alerts which are hugely popular. Our current focus is on seamless integration that helps consumers organize and mange their finances while completely integrating the customer experience across all channels. Wells

Fargo's innovative free online financial tool, My Spending Report, has been very well received. This expense management tool gives customers a big picture of their spending by automatically combining spending transactions from a customer's check card, credit card, checking account and online bill payment in one convenient place that can be accessed through a secured, online banking session and updated automatically each day.

A **Danny Peltz:** Over the years we have moved from a strategy of 'adoption' to 'adaption'. Wells Fargo entered the corporate Internet banking space much before any vendor solution was available in the market. So we took a slice of the existing PC banking application and adopted it to the Internet. But then on, we have consistently adapted our solution to our corporate customers requirements such that today the CEO portal is an integrated part of our customer's workflow. Last year, we launched our Desktop Deposit solution which helps businesses realize the promise of the recently enacted Check 21 Act. The innovative internet-based check imaging solution allows users to deposit checks directly from their desktop helping to improve cash flow, reduce frauds and improve overall cash management.

Q **How has the online customer behavior changed over the years?**

A **Jim Smith:** The biggest change through the years has been in the profile of online customers. At the beginning, the customers were the early adopters of the Internet. Now a large percentage of customers use the Internet as the main way to interact with the bank. So we have focused a lot on creating an intuitive GUI. Additionally, the type of services being offered has changed. Earlier the main focus was on self-service features, those that could traditionally be done on other delivery channels. But now we are focusing on creating features specific to the online channel, such as alerts and the spending report application that help customers do a better job of managing their finances online.

A **Danny Peltz:** In the corporate market, there has been a growing dependence on the Internet banking service. It is now central to our customer's banking activities, which translates into a very high level of comfort with the application and ability to easily incorporate new features that we offer. The adoption of our Desktop Deposit service, for instance, has been very high and we believe that ease of deployment of the new service has played an important role in this. On the whole, Wells Fargo strives to continuously meet the customer's ongoing demand for faster, simpler and more secure ways of doing business.

Q **What impact have technological innovations in this space made to Wells Fargo's online offerings?**

A **Danny Peltz:** Wells Fargo was one of the first banks to recognize the advantages of web services and we have used it extensively in our Internet banking infrastructure. Through web services we are sending automated email alerts regarding critical transactional information – customers select when and how they'll receive the emails. Web services also help in enabling multiple applications to draw on shared resources such as access and authentication services to minimize duplicative development and maintenance efforts. Another area where we see the impact of technology is in personalization. We are able to personalize our customer's online experience down to the individual user and transaction. In the corporate internet banking application, we have integrated and consolidated over 50 disparate internal applications and data sources into a single desktop that can be personalized to the role of each team member.

Q **What are the main challenges in the online arena and what does the future hold?**

A **Jim Smith:** The key challenge is to keep up the growth. On the one hand we need to ensure that the features and functionality of the online application continues to meet the needs of our customers and on the other we need to keep finding ways to scale up the technology to match the increasing level of transactions.

A **Danny Peltz:** I think we are still in the infant stages of the Internet -- new technologies continue to evolve and the opportunities ahead are enormous. We'll see a substantially more global and mobile business environment powered largely by the ability to conduct financial transactions anywhere, anytime, un-tethered by physically connecting to the Internet■

February 2005

Choicepoint, *a leading provider of ID and credential validating services notified 30,000 consumers that fraudsters had gained access to their profiles containing social security numbers, credit histories, criminal records etc. Initially, Choicepoint believed 145,000 consumers were affected (subsequently revised to around 500,000). Federal investigators are believed to have informed Choicepoint that its files had been breached by fraudsters, who set up bogus business accounts to gain legitimate access to consumer data.*

***

Joe Lopez, *a Miami businessman, sued Bank of America after a phishing attack wire- transferred USD 90,348 from his online banking account to a bank in Riga (Latvia). A forensic examination of Lopez's PC revealed that his anti-virus protection was outdated.*

***

The mobile phone account of celebrity ***Paris Hilton*** *and other T-Mobile customers are believed to have fallen victim to hackers who took advantage of a gap in the website security of T-Mobile (Sidekick) to reset passwords of T-Mobile customers. The result was that Hilton's address-book, photos, e-mail messages and voice mails were posted for public consumption on the Internet.*

***

March 2005

Lexis-Nexis *announced that its subsidiary Seisint, an authentication services provider, had experienced a security breach in respect of information such as names, addresses, social security numbers, driving license numbers of approximately 32,000 individuals. The information is believed to have been accessed through legitimate user IDs and passwords of customers of Seisint. Subsequent assessments have put the number of affected customers at 310,000.*

***

June 2005

Within days of ***Mastercard*** *announcing that a security breach may affect up to 40 million of its customers, phishing attacks were spotted attempting to cash in on the publicity. The attacks themselves were reportedly crude, and unlikely to fool a large number of people.*

The Realities of Phishing Today

Every month in 2005 there has been at least one eye-catching headline about how a prominent company has been a victim of a phishing attack, and the subsequent damage control exercises it is undertaking. These headlines emphasize the harsh realities about phishing today:

- Every organization - whether a large bank, online auctioneer, credit card company or authentication service provider - is vulnerable to breaches in online security.
- Anyone's personal information can be comprised – even if the person is a celebrity or a senator.
- The attacks are becoming more damaging: The number of accounts compromised in a single attack has increased to hundred thousands from a "few" thousands just a year back.
- The personal information compromised is available from sources that may not even be known to the individual.
- The techniques of phishing have evolved to a level where only the most sophisticated users of the Internet can detect them.

From the CEO's perspective, the biggest costs of phishing are bad publicity (of the kind seen above), the loss of future business and the lack of faith in e-commerce channels. The writing is clearly on the wall - phishing has morphed from "a security problem" to be dealt with by the Chief Information Security Officer (CISO) to "a credibility problem" to be dealt at the top management level.

"Phishing has morphed from "a security problem" to be dealt with by the CISO to "a credibility problem" to be dealt at the top management level."

Statistics confirm that there is a sufficient business case for anti-phishing measures that goes beyond headlines:

- Phishing e-mails are rising at the rate of 8 percent per month (14135 phishing sites in July 2005, up from 6957 in October 2004).

Source: APWG Report July 2005

- Phishing sites also grew exponentially (2854 sites were reported in April 2005, up from 1191 in October 2004).
- The key sectors attacked are financial services (85.9 percent of brands attacked in July 2005), ISPs (5.6 percent) and retail (2.8 percent) .
- The targets of phishers seem to be changing from marquee brands to lesser-known names such as credit unions. Again, there seems to be an increase in attacks on European financial institutions and ISPs.
- Fifty-seven million Americans have received phishing mails. That's about one in every five people in America. The proportion would be even higher if one reckoned only the Internet users.
- Almost 5 percent of target respondents respond to phishing mails. This means that

almost 3 million Americans have responded to phishing mails.

- Phishing is a trans-national criminal activity. In April 2005, 68 countries were reported to host phishing sites . Leading host countries US: 30 percent, Korea 14 percent and China 10 percent.

Estimates of direct phishing related losses range from USD 137.1 million to USD 1.20 billion. These seem to be underestimates considering that the total cost of identity theft related losses (total costs to consumers and business) has been estimated to be USD 50 billion.

"Phishing is really "a problem of authentication-customers can't reliably tell if they're hearing from their financial institution (server side authentication) or an imposter"

The Phishing Value Chain

To develop a solution approach, one starts with an analysis of how an attack is perpetrated. The Financial Services Technology Consortium (FSTC) defines phishing as "a broadly launched social engineering attack in which an electronic identity is misrepresented in an attempt to trick individuals into revealing personal credentials that can be used fraudulently against them".

The modus operandi of a basic phishing attack is simple. A phisher or attacker sends a phishing mails to a large number of people to lure recipients to fake websites of trusted institutions. The fake website often resembles the genuine website of the institution, and fools recipients into revealing authentication credentials such as credit card numbers, social security numbers, user names, passwords etc. Alternately, the phishers introduce code into the genuine websites of these institutions and lure customers into giving these credentials e.g. cross-site scripting or man-in-the-middle attacks. Subsequently, the phisher uses these credentials to do fraudulent transactions in the name of the customer.

Phishing techniques have now become sophisticated to the point where a phishing mail is not a prerequisite. Thus, phishing is really "a problem of authentication—customers can't reliably tell if they're hearing from their financial institution (server side authentication) or an imposter; institutions can't tell if they're hearing from their customer (client side authentication) or from a phisher who has stolen a customer's credentials".

A more technical explanation of the value chain requires a basic understanding of the authentication processes:

Client-side Authentication

This is the process by which a bank's user logs in to the online banking application. This process involves the usage of a static user-ID and a password that are presented by the user in the login page of the application. While there are many technical solutions that exist for client-side authentication-static user-ID passwords, dynamic passwords, smart cards, digital certificates and biometrics-based authentication-an overwhelmingly large number of online applications still rely on static user-ID and passwords for client-side authentication.

Server-side Authentication

Most financial institutions use digital certificates for server-side authentication. This means that the financial institution has obtained a PKI digital certificate from an accredited Certification Authority, CA, which is recognized by the standard browsers. While this is a fairly fail-safe mechanism from a security perspective, the procedures that will help the end-user to identify any attempts at server-side impersonation are fairly complicated. Phishers exploit this to the hilt.

Any successful phishing attack has to either bypass server-side / client-side authentication or possess server-side / client-side authentica-

tion credentials. A phishing attack achieves its objective by being able to successfully present a fake site as the genuine site to collect the use-credential and then present that credential to the genuine site for financial gains.

The techniques adopted for faking a genuine site are:

- Using a similar looking domain name (www.prudentia1.com). The last character of the word Prudential above is the digit 1 pretending to be the letter l.
- Using the @ symbol (www.citibank@thetrustedbank.com). The domain name above belongs to thetrustedbank rather than Citibank.
- Using a subdomain (www.citibank.yourbank.com). Citibank is a subdomain, belonging to the domain yourbank in the URL above.

Some attacks poison the DNS server (of the ISP), such that the genuine domain name is resolved into a wrong IP address (usually to the one belonging to a phishing site). A few attacks exploit the insecure usage of scripting languages by genuine sites, to inject their own scripts. These attack scripts are capable of a variety of things, from floating a fake login window in front of the genuine page to mailing the victim's cookie to the phisher. A few other attacks, where the attacker has access to the victim's desktop, involve reconfiguration of the browser to use an incorrect proxy. This proxy is capable of recording all the HTTP communication between the victim and the genuine server side.

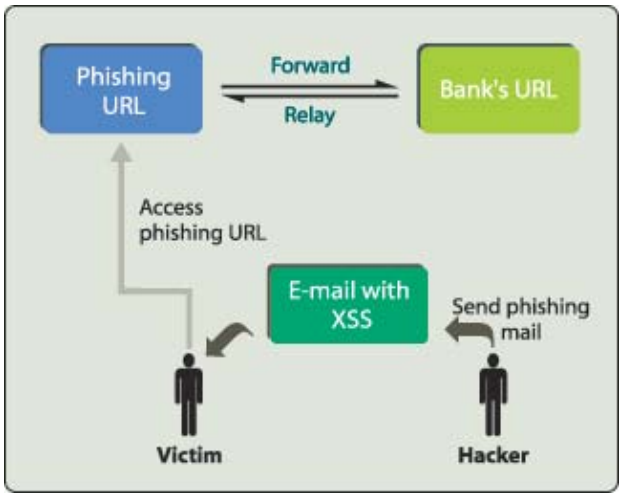
Client-side attacks involve uploading keystroke-monitoring programs, exploiting vulnerabilities in browsers.

Evolving a Solution Approach

Solutions so far have taken three streams-consumer education and awareness, regulation and technology.

Consumer Awareness and Education

The headline-grabbing phishing attacks of last few months have raised consumer awareness about phishing. Added to this, the sustained consumer education campaigns of major financial institutions, retailers and ISPs have also made large sections of the public aware of the problem. Indeed it would be uncommon to find a website of a bank, ISP or online retailer that does not



warn consumers about the dangers of phishing. However, most of these campaigns are directed towards the classical phishing techniques of sending a mail and then directing the user to a fake website. Today, phishing techniques have evolved to a level that makes them difficult to detect even if one is aware of the possibility of phishing. Only the most sophisticated Internet users would be able to detect phishing. Thus, the focus in most solution approaches is quickly shifting beyond consumer education and awareness.

Regulation

While fraud is punishable as a crime in all countries the problem that industry is facing with phishing is that there was no remedy till a fraud was actually committed. Even if a company observes a phishing site being set up or phishing mails sent, the only thing that it can do would be to stop the attack, if no one had been defrauded. This means the phisher can simply restart his activities from the next day. This is gradually changing. In 2004, the US enacted the Identity Theft Penalty Enhancement Act (ITPEA), which makes Aggravated Identity Theft or the use of a stolen identity to commit a crime as a crime in itself. This was no doubt a start, but still it did not address the issue. An Anti-Phishing Act, introduced in the US Senate in February 2005, if enacted would criminalize the act of sending a phishing mail or setting up a phishing website. This is more in line with what industry requires. It still remains to be seen how such an Act could be applied against attackers in other countries, but it

will no doubt be a deterrent for some attackers. The UK too is contemplating a similar law. These regulations, while providing remedial tools to industry to deal with attackers, do not in themselves stop or mitigate attacks. That part of the problem has to be dealt with by technological solutions.

Technology

The number of steps involved in an authentication means that there are vulnerabilities at each step. Most of the vendors who offer anti-phishing products address one or two of these vulnerabilities. Fighting phishing frequently requires more complex approaches, though. Any attempt to prevent phishing attacks has to involve addressing the vulnerabilities that exist at the various stages of an online banking experience (end-user desktop, browsers, free emails / SMTP server, ISP, server-side).

"Any attempt to prevent phishing attacks has to involve addressing the vulnerabilities that exist at the various stages of an online banking experience (End-user desktop, browsers, free emails / SMTP server, ISP, Server-side)."

Browser-side solutions

Netcraft provides a plug-in for the IE browser that maintains an updated list of phishing websites, which provides for an alert whenever the user accesses a suspected phishing website. Netscape 8 beta is expected to have a list of frequently updated blacklists or suspected phishing websites. It will also have a white list of trusted sites. Some sites use two-factor authentication, with one of the factors being a dynamic password to ensure that the credentials collected by the phisher are useless.

Server-side solutions

There are simply no excuses for organizations to be vulnerable to avoidable flaws like cross-site scripting, SQL injection etc. Besides these measures, organizations must identify if there are phishing websites that have domain names similar to it. They should then work with government agencies to try and bring the phishing website down. This approach may not succeed with countries that do not have strong anti-phishing legislation. They must also ensure that they never communicate to their customers using the free email-portal applications, as there is no way for the end-users to authenticate the sender of the mail in these applications. Instead they must provide mailboxes within the online banking applications.

It is fairly obvious from the brief overview of client-side and server-side solutions that anti-phishing solutions cannot be obtained simply out of a box. The approach that has the best likelihood of success in this scenario would be one that evolves with the problem. Key elements of this approach for any organization would be to:

- Undertake a systematic assessment of its vulnerabilities to phishing. A starting point would be to categorize all known phishing attacks in terms of techniques used.
- Identify potential solutions for each of the vulnerabilities identified.
- Deploy this combination of solutions, which would include both products and services.
- If a new phishing attack occurs, quickly analyze the technical basis of the attack to find what vulnerability is being exploited and then find an appropriate solution.

Conclusions

That phishing is the "hottest new scam of the 21st century" is well recognized now. The element of surprise stems from the list of organizations being attacked and the sophistication of attacks. Hence, phishing has now moved beyond the IT function into the domain of the management. Addressing this will require an

approach that combines user awareness and education, regulation and most critically, technology. Again, technology solutions cannot simply be pulled out of a box-these will have to have an integrated service-led approach■

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INDUSTRY ROUND TABLE

INTERNET BANKING
Experts View Point

Internet banking has been around now for a decade and it is well accepted as an extremely important delivery channel for banks globally. In this first FinacleConnect Virtual Industry Roundtable, we bring together a panel of industry experts to discuss the main trends that have shaped internet banking, the key learnings over the past decade and future strategies for banks in the internet arena.

Mike Grime
Managing Director of Operations, Technology and Shared Services
ANZ

Mervyn Northam
Head of Electronic Services
HSBC Commercial Banking
HSBC

Pearlyn Phau
Senior Vice President, iBanking, Consumer Banking Group Singapore
DBS Bank

Pravir Vohra
Senior General Manager & Head, Retail Technology Group
ICICI Bank

Sanat Rao
Associate Vice President & Global Head - Sales
Finacle, Infosys Technologies Limited

Hello everybody. I would like to thank all of you for taking time off your hectic schedules to participate in our first virtual Industry Roundtable where we are talking about Internet Banking. Without further ado, let us start off the group discussion by deliberating on the impact of the Internet on the banking industry.

How has the Internet affected the world of banking and your bank in particular?

Mike Grime: Enormously. The internet has made banking simpler and more convenient for customers who have grown up with computers and the internet and are time poor. Customers can do their banking when (and where) it suits them. It has freed up branches to be service and sales centres. I guess I'm a typical internet banking customer - I can't remember when I last visited a branch, unless I wanted specific advice or to purchase a new product.

Pravir Vohra: The internet has deeply impacted banking as it has many other industries for that matter. ICICI Bank was a very early mover in the internet banking space, not only the first bank to introduce this service in India way back in 1997, but one of the pioneers in Asia Pacific as well. It has helped us in no mean way to overcome the limits of geography and time (i.e. service customers irrespective of their location or time of day). Perhaps, and more importantly, as increasing customers and transaction volumes migrate to this channel it is contributing to customer acquisition and the reduction of transaction costs as well. On the service side, we are using the medium effectively in alerting customers in regard to their impending and/or fulfilled transactions.

Mervyn Northam: Usage of the Internet has grown very rapidly amongst the business community with a large proportion of our business customers having access to the Internet and many now having broadband. This has driven a demand from customers to be able to use the Internet for their more straightforward banking needs. Whereas the trend for many years was for business customers to make less visits to a branch and

Mike Grime

"... processing a transaction from internet banking can be done faster and more economically than any other channel."

Mervyn Northam

"Internet enables us to handle rapidly growing transaction volumes without growing infrastructure and costs at the same rate."

replace them with a telephone call, either to their relationship manager or to a call centre, the trend now is for more use of Business Internet Banking. The result is that Business Internet Banking has grown from a relatively marginal channel into virtually an equal partner now with the branch and telephone channels.

Pearlyn Phau: The Internet has opened up a whole new frontier for all businesses and this is especially so for banks. DBS has been investing and expanding its Internet banking services since 1997 and today there are just over 800,000 users of our iBanking service. DBS ibanking has been and remains the most popular online banking service in Singapore. As at end 2005, DBS Singapore's Internet banking services accounted for close to 80 percent of all online banking transactions in Singapore.

Sanat Rao: From purely a solution provider perspective, I am encouraged by what I see. We see a more conscious and a better-informed attempt by banks today to deploy Internet banking applications. This has to do with not only the fact that people in most parts of the world are a lot more comfortable with the Internet but also the fact that over the years, banks have reassessed the role that Internet banking plays in their delivery channel strategy.

Is the Internet 'just another' delivery channel or does it offer unique opportunities for banks?

Pearlyn Phau: As I mentioned earlier, the internet has opened up a whole new frontier for businesses. And for the banking industry, it introduces a whole new meaning to banking - allowing customers to access their accounts anywhere, anytime with internet access. This has brought about more conveniences to consumers and provides an area for banks to improve and work on to cater to consumers' needs.

Mervyn Northam: Use of the Internet as a delivery channel offers huge opportunities for banks. It places us at the forefront of modern business practice enabling us to provide service 24x7 in a cost effective manner. It enables us to handle rapidly growing transaction volumes without growing infrastructure and costs at the same rate. The Internet also strips away simple transactions from branch and call centre staff, thereby enabling them to concentrate on more productive conversations with customers.

Pravir Vohra: The internet is no doubt an alternative delivery channel. However, it offers significant opportunities to banks to expand their customer franchise, cross sell their products, reduce their transaction costs etc. It offers opportunities to set up and deliver on exciting alliances with partners as diverse as merchandising or travel. As I mentioned earlier, it can also help banks overcome the constraints of geographical reach. I would go so far as to suggest that the internet gives us a platform for designing products and services that can be delivered only through this medium and perhaps not through a traditional brick and mortar branch, such as on-line trading.

Mike Grime: I would agree that the Internet, though basically a channel, is a pretty unique one. Name another channel that can provide the customer with such a wide range of functionality, available 24/7 from a location that suits the customer, not the bank. Its also the most efficient form of service delivery for the bank - processing a transaction from internet banking can be done faster and more economically than any other channel. Its a win-win proposition.

Sanat Rao: In addition to the more obvious advantages to the customers of anytime, anywhere banking, internet banking can and does allow the bank to make a lot of third party products and services available through the bank's website, thereby expanding the scope of one-point access.

What are the main features that customers look today in an Internet banking service?

Pearlyn Phau: The main features that customers look for is user-friendliness, easy navigation, speed and security.

Pravir Vohra: We believe customers are essentially looking at security and convenience. Given

these basic 'hygiene' factors, they look at an internet banking service as any other channel expecting consistent 'full service' for product & relationship information and a wide range of transaction capabilities.

Mike Grime: Customers want product functionality in one place - the ability to do everything they want from their banking service in a single application. So paying bills, applying for an increase in credit card limits, transferring money between accounts, all have to be available from a single window. And it has to work intuitively using standard navigation principles. You are dealing with savvy customers who use Amazon, eBay and Google - they expect a professional internet application to behave intuitively to the same standards.

This brings us to our next question. With almost every bank offering Internet banking today, is it possible for banks to use the Internet to differentiate themselves?

Mike Grime: Absolutely. I think that's why ANZ has consistently won awards for its internet banking. Its about the breadth of functionality you offer and the intuitive way in which your internet banking application behaves in the eyes of the user. There are some really clunky internet banking applications out there - no names, please!

Pravir Vohra: Every bank has invariably offered branch banking. Yet they have differentiated themselves. Clearly and certainly it is not only possible (but perhaps even desirable) for banks to differentiate their internet offerings. These could be differentiated based on the user experience, the brand, the wealth of information available, the depth of transactional or execution capability etc. If we were to look at the internet banking offerings today, one would see a tremendous differentiation across banks even within the same region. Moreover, if for the sake of argument one was to concede that every bank had as good an internet banking offering as any other, it would still be differentiated by the underlying differentiation of its product or service mix!

Pearlyn Phau: Banks aim to differentiate themselves through the services they provide. At DBS, we strive to provide users with an added peace of mind when banking with us by continuously reviewing our processes and security measures to ensure sufficient security coverage.

Sanat Rao: Just as every bank has branches but not all banks are the same when it comes to products and services delivered through the branch, the banks can certainly differentiate themselves as far as their internet banking offering is concerned. Suffice to say that technology is not a limitation for such a differentiation. Whether it is the kinds of products that are offered over the bank's site, the number of third party products available, or quite simply the extent of straight-through-processing available, all these go a long way in allowing banks to differentiate themselves. We have seen many instances of more than one bank using the same internet banking application, but substantially different in the way they deploy the application.

Mervyn Northam: I believe that banks can differentiate themselves by tailoring their service to the specific needs of their customers. Many banks have simply re-named their 'Personal' Internet Banking Service 'Business' Internet Banking, rather than building the service around the specific needs of businesses. Business Internet Banking services need to recognize that the user is not always the business owner and this introduces the need for businesses to be able to nominate other users, with potentially different authority levels and with the ability to audit what each user has done and to 'check and release' transactions above the users authority. Differentiation can also be improved by improving accessibility and usability and improving security in a measured and considered way, balancing the desire for security with the need for ease of use and the boundaries of customer acceptability. Importantly, responding to changing customer demands will help a bank stand apart. Of course, this requires a robust customer feedback loop as well as a desire to react to the feedback!

Security has always been one of the main

Pearlyn Phau

"Customers look for user-friendliness, easy navigation, speed and security from an internet banking service."

concerns of customers with regards to Internet banking and is even more so these days because of the increasingly level of sophistication of Internet based frauds. How best do you think can banks allay security related concerns?

Mike Grime: I think security is becoming the biggest single issue for internet banking. Its not necessarily because of the actual levels of phishing fraud (which are very much lower than other forms of fraud) but because media attention has created a bogey man. Its certainly become a barrier to the less technically literate customer adopting internet banking. Perception is so strong that banks have to be seen to take action, and the only meaningful protection, where internet banking is used to make payments, is some form of dual factor authentication.

Sanat Rao: There are a variety of security measures that are available today. Exactly which of these measures banks want to deploy is their prerogative. But truth to tell, customers by and large do not understand all these measures. So I think the challenge before banks is to ensure that customer confidence is not shaken through a variety of methods to educate them.

Pravir Vohra: I think the best way of allaying security concerns will come through a combination of customer education and indeed in ensuring that the internet banking offerings are secure. Of course, there is always the dilemma as to how much security is adequate. This will actually depend on the risk perspective of the underlying offering. Quite clearly, different security approaches need to be implemented for corporate customers vis-à-vis retail customers; again it may make sense to differentiate funds transfers from account enquiries. Having said this, the importance of educating customers cannot be overemphasized. We believe an 'educated' customer is our best customer.

Mervyn Northam: Customer concerns regarding security can be allayed by providing simple, straight-forward information about how the customer can protect themselves, not only in terms of their use of Internet banking but also in their general dealings on the Internet. Further, banks should utilise the latest techniques to protect the interaction between the customer and the bank and provide information on how they protect this interaction.

Pearlyn Phau: As the biggest provider of internet banking in Singapore we aim to provide customers with the latest technological facilities to protect their property held at the bank. To provide our customers with an added peace of mind, we have implemented a slew of security measures in the last few years comprising: frequent customer educational blurbs, 128b SSL encryption technology, surveillance systems for velocity tracking and in 2003, we were the first in this market to introduce a one-time-password security measure for higher risk transactions like third party funds transfer.

What impact have technological innovations in this space made to your internet banking offering?

Pravir Vohra: Innovations in this space have improved the security and robustness of our offering.

Mike Grime: Other than in security terms, technological innovations have had relatively little impact over the last six years. We've seen the demise of some of the "first generation" internet banking software suppliers but in general terms, the standardisation that the internet has brought - you have to have common protocols or you can't talk to anyone else - has made a pretty level playing field at the user end. The days of having a unique proprietary solution is over - you have to supply something that is compatible with the standard operating systems and browsers that the average PC user operates. As with so much in modern banking, this isn't about imposing your way of doing things on the customer, its about delivering a service that fits with their requirements.

Mervyn Northam: For HSBC's Business Internet Banking service too, technological innovations have had relatively little impact. That is because the Business Internet Banking was launched virtually four years ago, after much of

Pravir Vohra

"There is a tremendous differentiation across banks even within the same region in the internet banking offering."

the technological innovation that made Business Internet Banking feasible, reliable and secure. There are advances now in the arena of security that will have an impact in the near to mid-term future but apart from that, the major advances have been and are in the area of mobile technology which is beginning to offer opportunities connected with Internet Banking.

Pearlyn Phau: With innovations in technology, DBS has came up with new offerings to cater to customers' needs or better enhance the iBanking experience. DBS launched the new regional iBanking platform in 2004. This is in line with DBS's vision to build an interconnected pan-Asian financial franchise, consolidating its iBanking services in Singapore and Hong Kong on the same platform. This means that the Bank can easily extend iBanking services to customers in Hong Kong and other parts of the region. The more robust platform also reduces DBS's operational risks and costs. This new platform, based on the leading J2EE standards, is highly scalable and allows customers to carry out their transactions at a much faster speed than the old system which was launched 9 years ago. Separately, two new services - Realty-Easy and DBS ME were also launched. Realty-Easy, the first property portal by a bank in Singapore, allows customers to post buy or sell property notices around the clock. DBS ME (Mobile E-Commerce) service is a permission-based digital bazaar where registered customers are informed of great lifestyle offers. Unlike other e-commerce services, DBS ME offers the added convenience of allowing the customers to make payments via the SMS platform by replying with just one message.

Sanat Rao

"If banks ensure the right security measures, then the single biggest challenge would be to live up to customer expectations."

What next? What new frontiers remain to be conquered in the field of Internet banking?

Mike Grime: I guess, if we can win the battle over security confidence, the sky's the limit. Small business customers want to use the convenience of retail internet banking to do more sophisticated things - and therefore make larger value payments. Today's security restrictions limit their appetite (and often those of the banks) for the level of risk. The next completely new frontier is probably full function mobile phone banking. There's a generation out there that has almost bypassed the computer in their lifestyle and will look to solutions around their mobile phone rather than their PC.

Mervyn Northam: I agree, mobile banking, not just text messaging, is an area that offers tremendous opportunities. In addition there are other avenues that remain to be tapped such as virtual relationship management and online sales-floor management.

Pearlyn Phau: Our greatest challenges include customer adoption and internet security.

Sanat Rao: I think if banks are able to ensure that at all times they have the right security measures in place, then really the single biggest challenge will be to be able to live up to customer expectations – and this is inevitable as customers get more and more comfortable with the internet in general.

Pravir Vohra: I think the best is yet to come. In countries like India, we need to gear ourselves for the challenges that rural consumer revolutions will, without doubt, bring about. We will need to reach out to ever increasing numbers of customers. The dilemma is that the number of transactions and load will only increase. Consumers are rapidly changing the devices they use to access our services. With shrinking form factors, the challenge of improving the user experience becomes more acute. The underlying browser and telecom technologies are morphing rapidly. New security vulnerabilities come to light every week. And the bouquet of banking products continues to grow with individual products becoming more complex and personalized. Lots of work will need to be done in the field of internet banking if only to keep pace with the world around us■

Round Table Moderator
Rekha Menon
Research and Contributing Editor
FinacleConnect

Case Study

National Commercial Bank, Saudi Arabia
Enhancing Customer Service

Technology is helping National Commercial Bank, Saudi Arabia, streamline operations and enhance customer service for corporate clients.

About National Commercial Bank, Saudi Arabia

Established in 1953, the National Commercial Bank (NCB) was the first bank to be formed in Saudi Arabia and is currently the largest bank not only in Saudi Arabia but all of the Middle East with a paid-up capital of SR 6,000 million (US$ 1,600 million). The total assets for the bank at the end of 2004 were SR 130,414 Billion (US$ 34,777 Billion) and net profit for the fiscal year 2004 was SR 3,531 million (US$ 942 million).

Committed to delivering better service to its customers by leveraging technology, NCB offers some of the most modern services in the banking world, all the while keeping Saudi traditions in view. All 250 retail branches are dedicated to Islamic banking services. NCB services it's over 1 million customer base through a comprehensive array of delivery channels including 891 ATMs and 5416 point of sale (P.O.S) terminals. NCB pioneered mobile banking in Saudi Arabia and was the first bank to launch credit cards for settlement of online purchases. It is estimated that in the fiscal year 2004, over 72 percent of customer transactions for the bank were executed through alternative delivery channels. NCB also runs the largest dealing room in foreign exchange and money market in the Middle East.

Business Drivers

In 2003, NCB was looking to enhance its corporate banking service. At that time, while some corporates used NCBDirect, a PC-banking solution, most corporate customers interacted with the bank through the bank branches and the level of manual processing was very high. Some of the key issues faced by NCB were:

Branch as the primary channel for corporate clients

Corporate customers mainly used bank branches for their day-to-day inquiries and transactions. Despite a PC-banking solution, NCBDirect, being available to a few customers, it was not able to reduce the branch overhead. NCB had a huge volume of Cashier Check/ Foreign Currency Draft requests from corporates, which involved manual operations at the branch with branch tellers often being required to interact with the treasury help-desk to decide on the best exchange rate to be given to the corporate clients.

"With the online service, the overall cost of service for corporate transactions has decreased and so has the staffing requirements."

Fewer features in incumbent system

The existing PC-banking solution offered limited functionality. Cash management features for deriving exchange rates in online mode from the treasury system were not available. In addition, liquidity management features such as account sweep, time deposits management and SWIFT / SARIE payments had to be executed by corporates at a bank branch or by calling up their relationship manager and sending the authorization by fax.

Non Web-enabled transactions

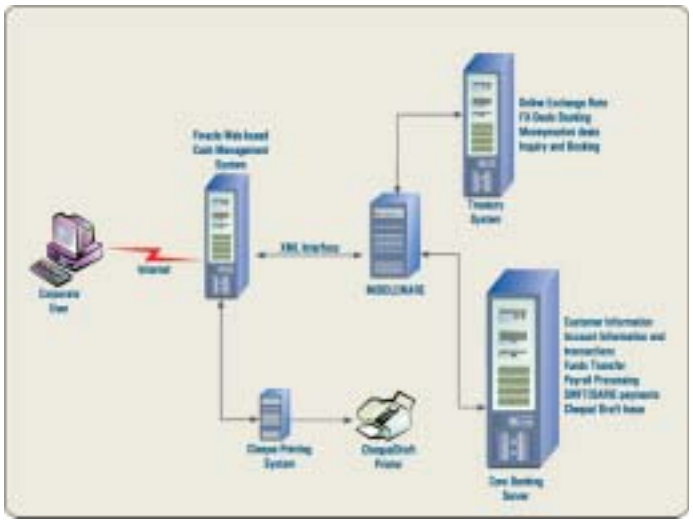
The absence of a Web-enabled solution meant that the level of manual processing was very high for both NCB and its customers. For instance, corporate customers had to prepare their payroll files in the format specified by the bank and courier the storage media to the bank for processing.

Solution Overview

After a thorough evaluation of online corporate banking solutions, NCB identified Infosys as its technology partner and selected Infosys' Finacle web-based cash management solution. The solution was implemented within 12 months.

Finacle web-based cash management solution is backed by Infosys' in-depth understanding of the banking domain and new generation industry standard technologies like J2EE and .NET. It helps eliminate constraints of geography to provide any time, anywhere access to information. Further, the solution provides banks with a rich set of functionality such as global liquidity management, client-managed short-term investments, pooling, sweeping, EIPP and cross-border payments.

Finacle web-based cash management offers multi-channel delivery through desktop and wireless devices, integration with large corporate ERP systems and image delivery for positive pay. In addition to providing the benefits of scalability, performance and fault tolerance, this solution also ensures reduced TCO (Total Cost of Ownership), increased flexibility, extensibility, faster time-to-market, quicker implementation and ease of maintenance for the bank.



NCB's Web-based cash management solution offering, named Alahli eCorp, has successfully addressed the following key operational areas:

Web-enablement of services to the bank's corporate customers

NCB's corporate customers do not need to use bank branches for inquiries and transactions any more. Alahli eCorp allows customers to remotely login using a browser, inquire and transact with NCB. Corporates can now access the liquidity management features of

the application over the internet to set up account sweep rules, initiate/roll-over money market deals and have the facility of an automated reconciliation of the account transactions with corporate ERP entries.

Cutting edge features

Finacle web-based cash management solution interfaces with NCB's treasury host system to fetch online exchange rates and seamlessly applies these rates to corporate transactions. The corporate is thus given the latest rate when approving the transaction. Finacle also provides a facility for corporates to enter / upload their check / draft requests. It also interfaces with NCB's bulk-check-printing solution and the core banking system to ensure faster processing of customer requests.

Real-time transaction processing

Corporate clients can set up third-party beneficiaries and transact SWIFT / SARIE payments online over the Internet. The solution interfaces with the bank's core banking system to ensure straight-through-processing of these payments. It facilitates the bank to set up spread for the exchange rates based on the corporate category and the amount of the transaction.

Secure architecture for safe transactions

Corporates can now easily upload payroll files using the Internet, over a secure connection. The payroll files formats are verified by the solution and delivery to core banking system is automated for processing. The status of the processing is displayed to the corporate in the application.

Reaping The Benefits

By partnering with Finacle, NCB has effectively addressed its existing business constraints and successfully met its corporate clientele's demands:

Enhanced customer service

The online service offers an enriching and convenient customer experience. Therefore corporate customers are increasingly opting for NCB's online service over other delivery channels.

Reduced costs

With the online service creating a virtual branch for NCB, the overall cost of service for corporate transactions has decreased and so has the staffing requirements.

"Finacle interfaces with NCB's treasury host system to fetch online exchange rates and seamlessly applies these rates to corporate transactions."

View from the Top

"With Finacle web-based cash management solution, we, at NCB, have taken steps towards offering business value to our corporate customers. The solution offers us flexibility and functionalities that would be the key differentiator for global banks and provides us the competitive edge. Its Web-enabled real-time transaction processing capabilities and secure architecture has given us that much needed business value."

Taha Al Kuwaiz
Deputy General Manager
The National Commercial Bank
Saudi Arabia

Streamlined operations

Rich functionality delivered through the online channel has reduced the load on branch operations and helped streamline operations. The bank can now access the bulk of transactions from a single point and fix the pricing of the products and features accordingly■

Infosys in the news

Q3 Revenues Grow 32 Percent YoY

Infosys Technologies Limited announced financial results for its third quarter ended December 31, 2005. Revenues for the quarter aggregated USD 559 million, up 32.2 percent from USD 423 million for the quarter ended December 31, 2004. Net income was USD 143 million (USD 112 million for the quarter ended December 31, 2004).

N R Narayana Murthy Among World's Most Admired

A new global study of the world's 15 most admired CEOs, conducted by Burson-Marsteller with the Economist Intelligence Unit, has ranked NR Narayana Murthy, Chairman & Chief Mentor, Infosys, as the eighth best CEO in the world. At the top is Microsoft's founder Bill Gates. Murthy, who is the only person from India to figure in the list, ranks ahead of Jeffrey Immelt of General Electric, Rupert Murdoch of News Corporation, John Chambers of Cisco Systems and Jorma Ollila of Nokia. Murthy was also recently inducted into the UN Foundation.

Nandan Nilekani on the prestigious World Economic Forum (WEF) foundation board

Nandan M. Nilekani, CEO, President and Managing Director of Infosys Technologies Limited became one of the youngest entrepreneurs to join 20 global leaders at the prestigious World Economic Forum (WEF) foundation board. Nilekani was responsible for inspiring business and public confidence through an exemplary standard of governance. Individuals with unique leadership experience - from business, politics, academia and civil society - participate for three-years in the board's activities.

Finacle – The Universal Banking Solution from Infosys

Recent Wins

- **Arab National Bank,** Saudi Arabia, selected the core banking solution of Finacle to power its aggressive focus on the burgeoning retail banking market in the Kingdom. The bank aims to leverage new generation technology to differentiate its value proposition in retail banking and manage the expected rapid growth in scale of operations.
- **Centurion Bank of Punjab,** India, has selected Finacle to power its technology-led business transformation initiative in the light of its recent merger. The Bank will replace its current system, Equation from Misys, and deploy Finacle core banking, e-banking and CRM solutions as the unified technology platform for the merged entity. Centurion Bank recently announced its merger with Bank of Punjab to become Centurion Bank of Punjab.
- **UCO Bank, India,** a leading public sector bank, has signed up with Infosys to deploy Finacle core banking, e-banking and web-based cash management solutions. This initiative will enable UCO Bank to not only achieve cost advantage but also derive significant business benefits in the competitive banking environment in India.

Customer Speak

"We were looking for a flexible solution proven in the retail banking market, and Finacle emerged as our first choice after a comprehensive selection process. Our business growth requires an efficient core banking system through which we can deploy quickly new products and services, and Infosys has committed to deliver solutions which meet our specific market needs."

Nemeh Sabbagh,
Managing Director,
Arab National Bank, Saudi Arabia

BOOK REVIEW

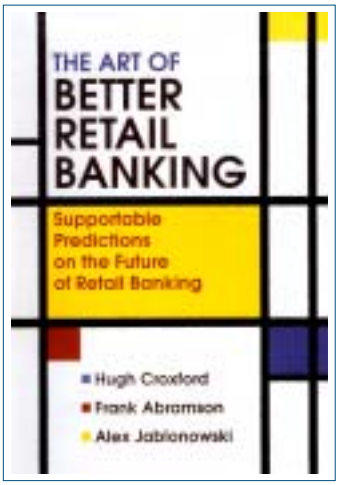
Hugh Croxford, Frank Abramson, Alex Jablonowski

The Art of Better Retail Banking:

Supportable Predictions on the Future of Retail Banking

A criticism often leveled on books on business and technology is that they are full of jargon, which combined with the dry technical nature of the subject matter makes difficult reading. Fortunately, this observation does not hold true for The Art of Better Retail Banking, the latest book on how retail banks need to prepare for the future. Written in an informal, almost colloquial style, the book is authored by experts who have drawn upon their long-standing experience in the banking industry and is an engaging read. The basic theory, which the authors espouse, is that retail banking is a mix of science, engineering and art, and banks need to focus efforts on the latter in order to lead in the retail banking arena. Science and engineering cover the operational, procedural, legal and regulatory aspects of banking that are in a continuous process of getting streamlined, state the authors. Where banks need to now start focusing efforts on is on the art of banking—the creative, marketing and customer focus elements of banking.

The success of a retail bank depends on its ability to attract and retail its customers, and how much of the customer's business it attracts. Hence customer relationships lie at the very core of retail banking. However, as the book points out, while retail banks, through the years, have maintained close personal interactions with their customers to understand their needs and requirements, the focus on an account-centric mode of banking and growth of alternate delivery channels in recent years have ensured that the personal touch has taken a back seat. Banks, therefore, need to re-engage with their customers. "To move a customer onto a higher plane, where the bank is regarded as a co-solver of financial concerns and a co-creator of appropriate financial services, requires dialogue. It requires that the bank knows enough of the customer's circumstances and desires to be able to help materially and advise. It requires that the customer trusts and respects the bank staff with whom they have the dialogue," state Croxford, Abramson and Jablonowski. No shortcuts are acceptable to the process of establishing customer relationships, they argue. Face-to-face interactions between bank staff and retail customers cannot be replicated by the telephone, the Internet or any other delivery channel. Branches and trained staff have to be available at the customers' convenience.



The other key areas that require improvement in the future are: marketing, which goes beyond merely placing advertisements to matching customer needs with bank competencies and raising awareness for the same; improving staff skills through training and also by learning from other industries like retailing and manufacturing; and finally reducing costs. The book says costs in banks average half as much or more of the total revenue. Notably, nearly 80 percent of all costs are systemic, which suggests that banks need to streamline their internal processes to reduce costs. In this regard, information technology, or more precisely, the appropriate usage of IT is a bank's greatest ally.

The book is divided into two sections. The first is devoted to providing a succinct overview of the current state of retail banking—the history, drivers, challenges with real-life examples and importance of technology. While the second section dwells on the proposition, what needs to be done for the future. Newcomers to the field of retail banking will enjoy the book, especially the initial section for a simplistic snapshot of the main drivers of retail banking today. As regards the suggestions and predictions in the latter half of the book, none of what is stated in the book is an illuminating revelation, and there are no path-breaking theories. But the suggestions are no doubt thought-provoking, and while they might appear too simple or self-evident, such propositions often get sidelined by bank management in their constant search for more exciting and innovative strategies.

The Art of Better Retail Banking gains from the practical banking experience of the authors, but the book suffers from being too UK-centric. Since Croxford, Abramson and Jablonowski have had a majority of their work experience in the United Kingdom, all examples are UK based and even industry figures quotes throughout the book only talk about the UK. By including more global examples, the book could have significantly broadened its appeal to a worldwide audience.

Notwithstanding this drawback, the authors need to be commended for providing a neat, clutter-free analysis of charting current developments in retail banking and highlighting trends that need focused attention in coming years. In the process, they have carried off the difficult feat of producing a book that is simple enough for a layperson and comprehensive enough for a banker ■

Rekha Menon
Research and Contributing Editor
FinacleConnect

Maximize Opportunity. Minimize Risk.

Has your bank experienced The "Finacle" Feeling yet? The feeling that comes from confidently facing challenges and seizing opportunities, while secure in the knowledge that your risks are minimized. With Finacle, the universal banking solution from Infosys, your bank too can experience that imminent feeling of success.

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