Apr. - Jun. 09 / Vol 05 / Issue 17

# FINACLE CONNECT

CONNECTING THE BANKING WORLD

## GROWTH THROUGH CHANNELS

**Cover Story**

The Evolution of Banking Channels

**Kaleidoscope**

Benelux: Banking on Economic Harmony

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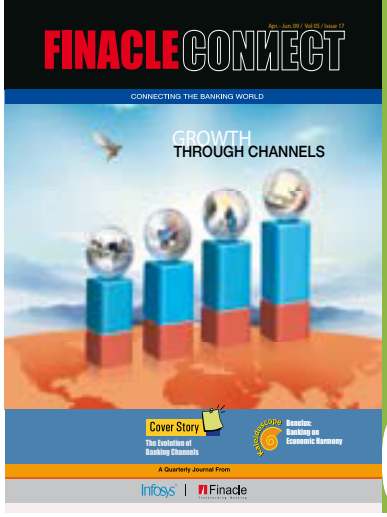


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# Voice from the Desk

"Tough times don't last. Tough people do." – is an oft repeated quote. Consider for instance, progressive banks the world over that have already recovered from the first numbing shock of the catastrophic crash of the past year, and are now roused to action, to maximize opportunities that exist for the enterprising, even in the downturn. They are focusing, among some other key imperatives, on stimulating growth through channel transformation.

"Channels are the face of the bank. Far sighted banks are energetically building their capability to serve the customer's varied needs through a customized and consistent banking experience at every touch point." emphasizes the cover story, which outlines the *Evolution of Banking Channels*. "Their (banks') motives for pursuing business beyond the branch have stemmed from their need to attract and retain customers on one hand, and to keep operational costs at its lowest, on the other." says the author pointedly.

Sam Plowman, Head of Online Banking, ANZ Bank, echoes a similar sentiment. He says "Banking customers are flooded with choice, more than ever before. That puts immense pressure on banks to ensure that all their channels are equipped with the right technology and people, along with processes that are geared towards delivering a consistently positive experience for customers.", in the feature article this issue, that focuses on the *Direct Benefits of Direct Banking*.

Kaleidoscope, takes you to the Benelux Economic Union, for an insightful view of its banking landscape. It concludes on a note that stresses the longevity of the mutually-beneficial cooperation between the three member states, though the expiry of the Benelux Treaty is imminent.

There is a lot more that will hold your interest in this issue of FinacleConnect such as the Tech Watch section which explores the scope of biometrics authentication for banking. I trust you'll find the read engaging. Please do keep sending in your feedback.

Till next time!

**Haragopal M**

Global Head - Finacle
Infosys Technologies Limited

# Direct Banking: Direct Benefits

## The direct banking role in improved customer experience

More than ever before, banking customers are flooded with choice. That puts immense pressure on banks to ensure that all their channels are equipped with the right technology and people, along with processes that are geared towards delivering a consistently positive experience for customers.

Across the industry, banks, including ANZ will look at making products and services available to customers on their channel of choice. This applies to all types of customers – retail, corporate or institutional – and banks must be prepared to meet the expectations of a diverse set of customers with differing needs. While the branch network will continue to play its role, online channels including what the industry terms "direct banking", can drive customer convenience by providing greater choice and flexibility.

For example, if banking through channels other than the branch is a customer's preference, all routine transactions such as bill payment, balance enquiry or funds transfer must be available when and where the customer demands. As well as meeting the customer's needs and improving their experience, this has flow-on benefits to the organization's operational efficiency.

*"Whilst this could work as an entry strategy, direct banking delivers better results when it is supported by a personal, human element."*

## Support for organizational goals

Direct banking assumes a greater strategic significance in the current business environment, when organizations are looking to increase the effectiveness of every dollar spent. The migration of routine, day to day transactions, to direct channels not only supports this objective, but also improves the effectiveness of traditional channels such as the branch network.

Utilizing direct channels for routine transactions allows customer-facing staff at the branch to focus on generating sales, relationship building or providing advisory services, rather than facilitating basic transactions.

Also, there's potential for banks to use direct banking as a market entry strategy to quickly position themselves prior to setting up physical infrastructure. Of course, this is dependent on a number of factors, especially regulatory compliance. Assuming that circumstances are in favour, a direct presence along with the necessary supporting core systems, can be rolled out much faster than a fully staffed branch network.

Whilst this could work as an entry strategy, direct banking delivers better results when it is supported by a personal, human element. ANZ follows this consistently by creating an online and offline presence in parallel, when we enter new shores.

As mentioned at the outset, direct banking can help create a superior customer experience. Although traditional channels have served well over the years, the options are more limited for differentiating the customer proposition. Most of the recent service innovation in banking has been driven by technology-led channels. Direct banking has a primary role to play in creating value for customers by providing an experience that is built on a foundation of convenience, functionality and usability.

At ANZ we believe in creating value for our customers by offering them a suite of products and services that are easy to understand, intuitive to deal with and backed with strong customer support. Direct banking is an integral part of this full-service offering.

## Strong adjunct to traditional channels

Direct channels will only become stronger in future, which means banks will have to find ways of improving operational processes. At present, direct banking has been successful for transaction and deposit products, especially in those countries where regulations permit the electronic verification and approval of new customers.

*Technology partners must use their expertise to create solutions that will improve processes, lower cost and create a superior experience for banking customers.*

However, the inability to handle cash still remains one of the limitations of direct banking and so it is reliant on branch support for this purpose. If a bank's direct strategy involves an aggressive ATM or merchant network rollout, it will have to create physical infrastructure for cash management, either through its own network or a partnership.

How banks go about this depends on the size and scale of their overall operations. Banks with no physical infrastructure may partner with various entities such as retail chains or post offices for cash management and have separate alliances with other agencies for identity verification. On the other hand, banks founded on the traditional model rely on their branch infrastructure to support these processes.

Customers like to seek face-to-face advice on products such as insurance or investments. The ability to meet such inquiries needs a direct model which may still be some way away.

We have also seen that "pure" direct banks that have limited physical and brand presence are vulnerable to losing customers in uncertain times. Accordingly, established banks have recently seen a steady growth across all channels with customers continuing to have confidence in both traditional and direct banking offerings of well-known brands.

## Far reaching impact of direct technology

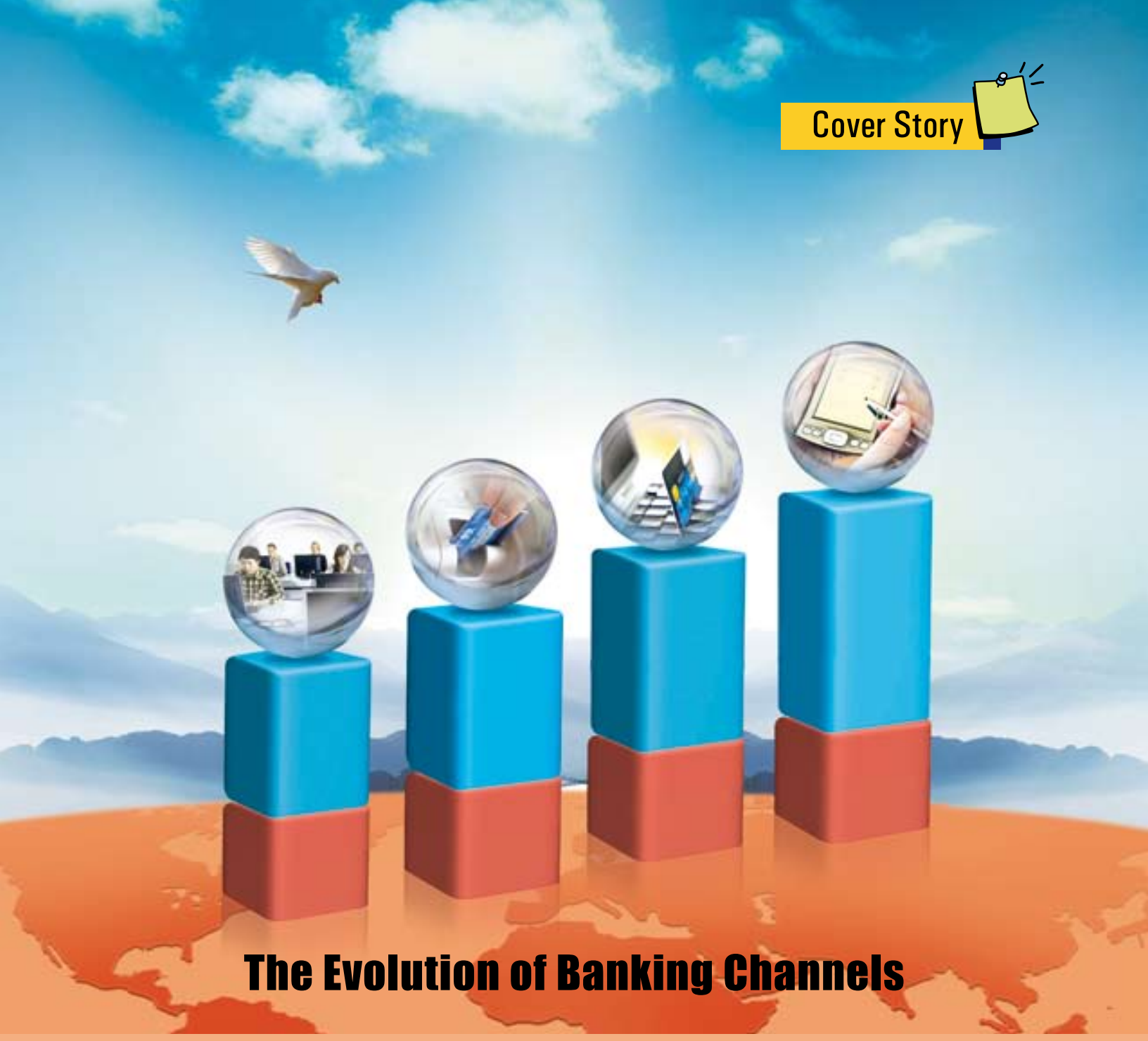
Direct banking can transform the way services are delivered. Until now new channels have been adapted from traditional branch processes, with some improvements. Going forward, good 'direct' practices can be applied across all channels, creating significant operational efficiencies and a consistent customer experience.

This is best illustrated through an example for customer product applications:

- All customer applications for new accounts are web-enabled and electronically verified
- This creates a mode of origination for the bank that can be used via any channel - online, via phone or at the branch
- The application process becomes paperless, consistent and automated, with customer records stored in a central repository

What's more, technology can help shape the banking experience that customers want and banks wish to deliver. To be successful, technology partners must enable banks to progress beyond the 'known'. Rather than simply reacting to market needs they must use their expertise to create solutions that will improve processes, lower cost and create a superior experience for banking customers. This will be the difference between those vendors who are on top of their game and those that are only seeking to get there ▪

**Sam Plowman**
*Head of Online Banking*
*ANZ Bank*



# The Evolution of Banking Channels

**Ask your grandfather about his bank. He will tell you about the friendly manager at the bank down the street, who joined him and the boys for gin rummy, at the town club, on odd weekend nights. Ask your dad. He will tell you proudly how he now banks on the Internet, though he secretly worries if it's really safe. Ask your college-going nephew, if you do manage to connect with him when he has his iPhone switched off…he will just pat the PDA in his pocket and smile knowingly.**

'Channels', as banks understand the term, have undergone significant evolution over the years. This is largely influenced by:

- Gen Y users: A segment that is mobile, mostly online and keen on self-service. They use a mix of channels and expect transparency of transactions across channels
- Technology: Continuous upgrades in Web and collaboration technologies have brought about great changes in channel usage. New devices have had a significant role to play in improving the channel user experience

Financial institutions have been 'adopters' in the channel space, not leaders, and have modeled their usage patterns guided by examples set in the retail verticals. Their motives for pursuing business beyond the branch have stemmed from their need to attract and retain customers on one hand, and to keep operational costs at its lowest, on the other.

*"Far sighted banks also leverage channels to create favourable and engaging user experiences."*

## As we see it today

With the boom in Internet usage, online banking continues to grow worldwide. In some regions the growth pattern is visibly dramatic, and in others robust expansion has being predicted. Today, Internet banking customers are not only paying bills and making cross-border fund transfers but are also learning about banking products, seeking proactive help from other banking customers and sharing business ideas, with banks as the intermediary. With new dimensions, like social networking, added to the online space, these patterns are bound to get more interesting.

Another promising new kid on the channel scene is the ubiquitous mobile phone. Mobile banking is expected to have, possibly, greatest penetration among the masses, in the years ahead. It is specifically attractive to Gen Y users, who want to stay connected to their bank accounts, when on the move. For instance, they seek live updates from the stock market, and transact on-the-go, taking advantage of any favourable bullish opportunity, that comes their way. With mobile penetration in countries like China and India growing at phenomenal rates, phones are also the device of choice to reach the unbanked and the under-banked. Currently, mobile banking transactions are mostly restricted to inquiries and payments, but with increasing levels of sophistication in technology, they are slated to enable true banking, in every sense of the word.

ATM, as a channel, may not have grown, especially in the advanced markets, in numbers, but their superiority in terms of the nature of transactions they support, has substantially scaled. The ATM, as we all know, can accept cheque deposits or cash deposits, and even credit money online. Fund transfers within the bank and outside of the bank, bill payments and renewal of various subscriptions are but some of the popular transactions supported by ATMs today.

Far sighted banks also leverage channels to create favourable and engaging user experiences that drive users to frequent the bank's website, ATM or kiosk, as the case may be. These actually have a significant role to play in influencing users' purchase behaviour positively. Thus, these banks are exploring realms where they interpret customer behaviour and tacitly deploy innovative means of right-selling.

Banks augmenting their channels with support for social networking and social commerce are racing ahead of the pack. They have ushered in social business models and social lending to the Internet space. Customer advisory councils are also popular on alternate channels, especially when banks want to test market their new products and invite feedback from a select set of customers.

## Trends for tomorrow

*Metamorphosis of virtual channels*

Internet banking will be deeply impacted by social commerce. Customers will engage in virtual advisory councils and influence popular choice of banking products and the bank's service experience. They will rate new offerings from the bank, through these forums and advise the bank about appropriate modifications. Customers will interact within this social network to discuss their specific needs. This will create the potential to initiate transactions like peer-to-peer lending. They will also participate in surveys, to help banks enhance

their offerings. Thus, customers will become virtual participants in the design of banking products and services.

Personalization will play a big role in increasing customer stickiness. Customers will seek personalization not just in the look, feel and navigation of the Internet banking forum, but will demand personalization of transactions and the transaction calendar too. They will leverage online tools to assist them through their banking experience. For instance, customers active in the stock market will download and embed the stock monitoring tool on their personal interface. Widgets from external websites will be increasingly leveraged, eventually replacing desktop personal finance tools. A dashboard view, based on information of interest and preferred Internet banking activities will be a top usability priority. Customers will also demand a view of all their relationships with various banks, through a single window, facilitated by the channel.

*"Mobile payments will be the next big money spinner for banks and partner organizations managing payment networks."*

Enabling self-service will be the key to keeping customers engaged. Customers will increasingly use text and video chats for support. Collaboration portals will increase in popularity and usage. Virtual channels will be supported by queuing engines leveraging artificial BI to allocate relevant support personnel, based on the context of the customer request. Support personnel will in turn co-browse with customers to provide useful inputs and services. Various Wikis will be made available based on the context of the customer's usage, to help them perform complex functions, in the self-service mode.

Corporate houses leveraging enterprise solutions, will seamlessly integrate transactions with their banks' e-banking systems, to reduce duplication of efforts. For instance, a manager will authorize a vendor payment through the organization's enterprise solution, and this authorization will be reflected in the bank's e-banking system, without the company having to make another specific authorization. In addition, the corporate house will be allowed partial administrator rights to partly manage the bank's e-banking system. This will include setting up role responsibilities, transactional capabilities, users, user registrations, password policies, workflows, authority matrix, exception handling rules and even customizing the user interface. In effect, this will create a 'mini e-banking system' of sorts, specific to the corporate.

*Mobile banking to make it big*

Several mobile banking products will capture the imagination of the masses, in the days ahead.

- Mobile remote cheque deposit: This could take several forms. One common means will be capture of the cheque image through the mobile phone's camera, followed by transmittance to the bank, through the mobile banking application. This will be akin to lodging the cheque at the bank.
- Mobile payments: These could be one-stop remittances or take the shape of payments for bills and purchase of tickets, payments made using cards or online payments using bank accounts. It is expected that mobile payments will be the next big money spinner for banks and partner organizations managing payment networks. The volumes for small value payments are expected to be phenomenally huge, contributing a large chunk to the 37 billion yearly transactions predicted for 2011.
- Contactless mobile POS payments: Mobiles are expected to replace cards, with the identity of the customer and the issuer borne in the mobile application, protected by strong authentication mechanisms. This is slated to become the smart way to pay. However, ready adoption by merchants will determine its future.
- Mobile content payments: A significant sub-category of mobile payments, mobile content payments – entailing payments against purchase of mobile content like songs, wallpaper and so on, through bank accounts, using mobile devices – has immense business potential.
- Mobile wallet: With customers carrying multiple banking relationships in their mobile phones, not unlike the current credit card, mobile wallets will eventually replace the traditional wallet.

- Personal finance management: This can be partially supported through the mobile device. For instance, banking customers can maintain details of various bank accounts through mobile applications or use GPRS to view online applications.

*Emergence of more channels*

New banking channels, like the television, are slated to emerge. In under-developed countries, the television often reaches remote pockets not penetrated by the mobile network. In addition, the aging population in several countries is more comfortable using the television, rather than the Internet. Television banking may well be the means to include this segment. Service assistance can be offered through voice assisted help.

*Customers will be allowed to initiate transactions through a channel, approve the transaction through another and inquire on the status of the transaction through yet another channel.*

Old channels, like kiosks, will turn a new leaf in the months ahead. With self-service catching on as a trend, kiosks will be used for functions, currently supported only at bank branches. Cheque scanning and deposit, forex transactions, online cash deposit and other such functions will soon move to the kiosk. To aid this process, extensive help functions will be made available at kiosks. Online collaboration with the bank's service support staff will be facilitated. Video chat and co-browsing will be increasingly leveraged by customers. Kiosks will be able to use sophisticated authentication mechanisms like biometrics to secure transactions.

*The multi-channel experience*

As customers embrace more than one channel, the expectation will be that transactions turn channel agnostic. In addition, customers will be allowed to initiate transactions through a channel, approve the transaction through another and inquire on the status of the transaction through yet another channel. Efforts will be made to ensure consistency and richness of the service experience, across channels. This multi-channel experience would, needless to state, have associated business validations, like a channel-specific remittances limit. The bank's channel rules, factoring in both regulatory and business mandates, will effectively smoothen these complexities, ensuring that customer convenience remains uncompromised.

## What's in it for banks

Channels are true engines of banking growth, and play a strategic role in the financial services space.

- Channels are instrumental in lowering cost per transaction for banks. As more and more customers adopt the self-service mode, operation costs for banks will continue to dip. Banks' personnel can invest energies in active selling rather than engage in mundane teller transactions
- The reach of the bank will extend way beyond the reach of the branch network, to include segments accessed by virtual channels like the Internet
- Well-managed channels will help enhance the quality of customer service and thus increase customer stickiness
- Channels will serve as robust customer acquisition engines bringing in new customers into the fold – even those who would possibly never walk into a branch
- The newer breed of banking customers will consume product and services primarily through channels. Thus, new-age channels will necessarily be a significant focus area for banks

## Last word

It's no surprise that progressive banks are actively investing in their channel strategies. They understand that customers are critical to their success, and no effort is spared to fulfill their ever-increasing expectations. Channels are the face of the bank, to the customer community. Thus, far sighted banks are energetically building their capability to serve the customer's varied needs through a customized and consistent banking experience at every touch point.

Transformation through multi-channel integration is key to achieving this. Not only does it help satisfy customers, but it also helps to reduce costs and increase agility, thus helping banks attain sustainable growth ▪

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# Benelux: Banking on Economic Harmony

**Three countries, Belgium, Netherlands and Luxembourg, created a startling example of economic harmony when they formed the Benelux Economic Union in 1958, laying the foundation for many such similar structures across the world. The Union was formed with the objective of promoting free movement of human capital, financial capital, goods and services in this region. From then on diverse political systems, cultures and languages took a backseat to establish a common economic consortium driving growth and prosperity. The Benelux region has the distinction of being the first entirely free international labor market, but its goal of merging the fiscal and monetary systems of the three countries actually took place when these countries joined the EU (Economic Union) as founding members and adopted Euro as their currency.**

A strong outcome of this cooperation has been the emergence of a key financial region, though small in terms of GDP when compared with the likes of other European giants like UK, France and Spain. These countries are home to a large number of financial institutions who have made their mark at Europe and international levels, and have been acclaimed leaders in the markets in which they operate. The financial index of the region is considered advanced but closely tied to the financial health of Europe. After witnessing a solid and steady rise in economic growth over the past few years, the region has also been mildly affected by the recession and banking crisis that has affected the rest of the globe. It is at this time that the real test of the financial accord has come to fore, manifesting in the bail-out of one of the largest European banks, Fortis in early 2008, where the three governments chipped in to acquire a 49 percent stake, rescuing the bank from an imminent collapse. Once again in September 2008 the three governments agreed to invest Euro 6.4 billion into Dexia - another major bank. With many such examples of joint-cooperation there are no doubts that the region has a stronger sense of unity and will tide through the current economic crisis successfully.

*'Benelux was a strong contender for the Western European leadership in financial innovation and novelty services.'*

*GDP Growth*

| Region / Country | 2006 | 2007 | 2008 |
|---|---|---|---|
| Benelux | 3.3 | 3.8 | 2.3 |
| Belgium | 3.0 | 2.6 | 1.1 |
| Netherlands | 2.9 | 4.2 | 2.0 |
| Luxembourg | 4.1 | 4.8 | 3.6 |
| Euro Area | 2.1 | 2.7 | 1.4 |

## Banking trends in the region

In the 80s and the 90s, the Benelux was looked upon as a model case for strong and steady economic growth. In their own quiet way, this region set examples to the world in the areas of financial liberalization and services-led economic growth. Benelux was a strong contender for the Western European leadership in financial innovation and novelty services, with many home-grown banks introducing sweeping changes in the way markets operated. They are still known for their customer service models, responsiveness levels, innovative products and services along with affinity for use of new age technology. However, introduction of the EU and the increasing influence of CEE countries due to globalization and other factors have diminished much of the importance that the region held before. In fact, the very need for Benelux as a group is being questioned in many circles. This is compounded by the fact that the Benelux Treaty will expire in 2010.

It is without any doubt that the economic connection between the three countries runs much deeper than any other common bond that they share. The economies of these three countries thrive on their own individualistic strengths with Belgium being the world leader in the diamond trading business, Netherlands being the pioneer in the floriculture market and Luxembourg thriving with its tax breaks and exemptions. However, there are many corporate groups, along with large, mid and small tier banks that consider the Benelux as their home market and operate their business on that premise. They operate with a single structure across the three countries with common headquarters for all three

*Top Ten Banks in the Benelux Region in 2008*

| Rank | World Rank | Bank | Country | Tier One Capital $ mn |
|---|---|---|---|---|
| 1 | 17 | ING Bank | Netherlands | 43827 |
| 2 | 20 | Rabobank Group | Netherlands | 41931 |
| 3 | 22 | Fortis Bank | Belgium | 37789 |
| 4 | 40 | Dexia | Belgium | 21418 |
| 5 | 58 | KBC Group | Belgium | 16108 |
| 6 | 208 | Bank Nederlandse Gemeenten | Netherlands | 3022 |
| 7 | 234 | NIB Capital Bank | Netherlands | 2641 |
| 8 | 239 | F. van Lanschot Bankiers | Netherlands | 2483 |
| 9 | 261 | Banque et Caisse d'Epargne de l'Etat Luxembourg | Luxembourg | 2249 |
| 10 | 287 | Axa Bank Europe | Belgium | 1976 |

*Source : The Banker Top 1000 World Banks*

businesses. The range of products and services are similar across lines, people move freely across branches, banks hire people for a Benelux position rather than individually for a country and investor interest spans across borders. In the light of all of this, it seems greatly likely that the economic harmony and power of Benelux is truly slated for growth.

Another important factor that has stood steadfast in promoting economic growth in this region is the very beneficial tax regulations, with Luxembourg being the pioneer. This has contributed to Benelux being a clear favourite international investment destination. The banking system is deeply intertwined with European banking due to the increasing inter-dependency between economic activity and activities such as payments and clearing. The region is now a hot-hub of international capital and is home to numerous holding companies, investment banks, financial advisory specialty firms and law firms. This has also linked the Benelux economy inextricably to the global economy, and its fortunes to world economic index.

## Key trends in Belgium

Belgian banks that started out as strong retail banks gradually ventured into investment banking in the 90s. The open regulatory environment and the presence of a large number of international businesses, particularly multinational corporations, attracted the larger banks. Their mainstay products were private equity, structured products, structured debt, cash management and advisory services. Banks invested heavily in these areas while also concentrating on developing strong risk management and compliance mechanisms, to help them manage internal and external risk. Banks in Belgium are considered inherently robust primarily due to this strong focus on diligence in conducting business. Consolidation within the Belgian banking sector has been intense as European banking groups responded

to the heightened competition brought about by the single currency. The number of purely Belgian-owned banks declined significantly after years of mergers. Belgium has a very large concentration of bank branches and a very high ratio of bank-branch per inhabitant.

Electronic banking is widespread in Belgium. All Belgian banks follow the national electronic banking standard, ISABEL (Interbank Standards Association, Belgium) which is a national EDI standard for balance and transaction reporting. ISABEL provides banks with cost and performance-efficient means of domestic and international transaction initiation services. Internet banking is also developed on ISABEL standards and all banks offer some form of Internet banking.

*'Dutch banks are increasingly offering direct banking services, taking the ASP route to benefit from the reduced costs and increased efficiencies.'*

## Key trends in Netherlands

The global economic downturn, the US sub-prime crisis, the disappointment over the takeover of the pride of Dutch banking, ABN Amro by the UK banking group RBS - none of these reasons have dampened the spirits of the banking system in Netherlands. However, these events have definitely put Dutch banks on a cautious foot, and they are now exercising utmost due diligence in all transactions that are of the nature of debt restructuring, corporate financing and deal financing.

Dutch banks are mostly universal banks and do not prescribe to any overt distinction between retail, commercial, investment banking systems. There are approximately 94 commercial banks including the cooperative Rabobank, 7 securities credit institutions, 4 savings banks and 4 mortgage banks. In addition, there are 31 foreign bank branches in the Netherlands. Almost all banks offer advanced domestic as well as cross-border cash management products such as notional pooling and cash concentration to their customers. Netherlands is also well knows for its high standards in tax advisory and financial advisory service firms, many of which were born and bred in the backyards of major Dutch banks. Banks also specialize in offering M&A advisory services as Dutch tax laws are extremely favourable and painless in this context. Thus, many Dutch banks look forward to heavy investments in these areas as these form the dominant lines in their business. Many Dutch banks maintain their own proprietary systems for transactional services, electronic banking and multi-bank reporting. However, increasing volumes, complexities in transactions initiation and maintenance, complex sweeping and pooling requirements have forced many to adopt modern technology to meet these requirements. Today, Dutch banks are also increasingly offering direct banking services, taking the ASP route to benefit from the reduced costs and increased efficiencies. As a result they are exploring outsourcing of hosting models and adopting pay-per-use models.

## Key trends in Luxembourg

What distinguishes Luxembourg from its counterparts in Benelux and Europe or elsewhere in the world is its GDP per capita – highest in Europe and second highest in the world, after Qatar. It is Europe's topmost destination for international investment and a major centre for financial services. The economy is considered vibrant, strong and resilient in relation to the relatively small size of the country.

Its regulations ensure fair and ethical financial and corporate practices, as well. These factors have led to Luxembourg's financial institutions enjoying strong credibility in the international market. Luxembourg has an elaborate and sophisticated banking sector regulated by the Commission de Surveillance du Secteur Financier (CSSF). There are approximately 130 financial institutions in the country comprising international banks, co-operative banks, mortgage and rural banks. More than 90 percent of these banks are foreign, including representation from all leading banks of the world. The sole exception is the state-owned Banque et Caisse d'Epargne de l'Etat Luxembourg (BCEE) which is the leading universal bank and banker to the Luxembourg government. Luxembourg banks are largely universal banks which however tend to have a large private banking division due to the inherent nature of their dominant business.

*Dutch banks lead in technology adoption, as they aggressively seek to replace their legacy systems with more resilient and future-proof systems, to drive their operations.*

All banks offer cross border credit lines and cash management products, also made available electronically. The domestic payment system - LIPS - is a highly efficient electronic inter-bank system. Cards are the most widely used payment instruments with scaling numbers in terms of usage. There are no exchange controls prevalent in Luxembourg. Internet banking is provided by almost all banks and is the most prevalent method of banking in the country.

## Role of technology in Benelux banking

Banks in Benelux have shown great affinity towards technology. Their technology spends have mostly focused around regulation and compliance, financial advisory, e-banking and channels. Dutch banks lead in technology adoption, as they aggressively seek to replace their legacy systems with more resilient and future-proof systems, to drive their operations. The multitude of systems and datacenters these banks have accrued, through years of mergers, has also ushered in the need for effective rationalization. Many banks are moving towards SOA as the preferred technology for smooth and hassle-free operations.

## Conclusion

The Benelux region has been a stalwart in internationalization of its economy, albeit with different strategies: Belgium by an open-door policy towards foreign banks, Netherlands by globalization of its domestic banks and Luxembourg by attracting foreign banks with off-shore banking and friendly tax laws. Though the Benelux Treaty will expire in 2010, the bond forged by its economy is still strong enough to pave the way for the formation of the 'Benelux Union', thereby ensuring the continuation of mutually-beneficial cooperation between the three member states, within the larger European context ▪

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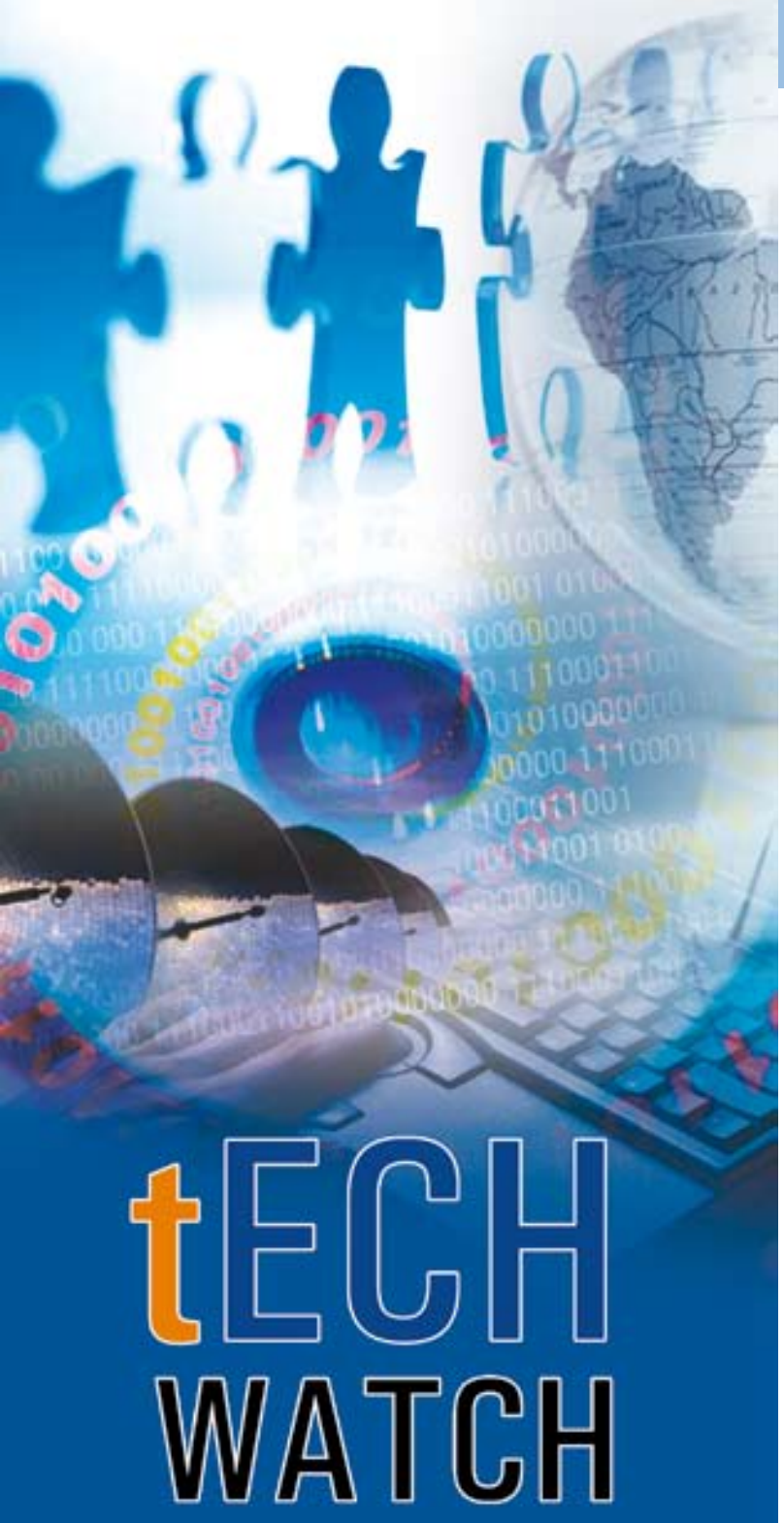


tECH WATCH

# Bank on the Fact: There's Only 1 You!

## Banking on yourself

Uniquely identifying humans, based on one or more intrinsic physical or behavioural trait, by various systems, is not new. The most common use of biometrics is to provide physical access to secure areas. Though there are several types of biometric identification schemes, the most prevalent form is fingerprinting.

Banks like Deutsche Bank and Citibank have been using biometrics for several years, for employee access to computer server rooms. But, when it comes to uniquely identifying users or customers for banking transactions, banks have been slow to deploy biometrics for authentication, due to the stigma associated with it. Even in the light of the fact that the 9/11 terrorists accessed bank accounts with fraudulent social security numbers, there are no biometric measures in treasury departments' proposed mandates to ensure customer identification.

However, the new biometric standard for financial services, ISO 19092:2008, by the International Organization for Standardization, could result in increased adoption.

## Need for biometrics

Internal and external fraud faced by banks is on the rise and there is a clear need for stronger authentication. Estimates indicate that a majority of fraud cases are internal (led by bank employees breaking into customers' accounts and withdrawing money), while only a small percentage of fraud cases are external (where individuals pose as customers and withdraw money).

Passwords are the default mechanism of authentication for most applications including those at banks. From our desktops to e-mails, from chat programs to online banking, we need passwords to authenticate ourselves. Though common, it brings with it challenges:

- Passwords must be memorized; people therefore tend to select weaker passwords
- Passwords and PINs can be illicitly acquired by direct covert observation
- There is no way to positively link the usage of the system or service to the actual user; there is no protection against repudiation by the user ID owner

- With phishing, a password can be stolen when it is being specified into the system

Biometric characteristics are more difficult to copy or share than passwords, and significantly improve individual accountability. Most commonly used biometrics include:

- **Face:** The analysis of facial characteristics
- **Fingerprint:** The analysis of an individual's unique fingerprints
- **Hand geometry:** The analysis of the shape of the hand and the length of the fingers
- **Retina:** The analysis of the capillary vessels located at the back of the eye
- **Iris:** The analysis of the colored ring that surrounds the eye's pupil
- **Signature:** The analysis of the way a person signs his or her name
- **Vein:** The analysis of the pattern of veins at the back of the hand and wrist
- **Voice:** The analysis of the tone, pitch, cadence and frequency of a person's voice

*"Biometric readings, ranging from several hundred bytes to over a megabyte, bring in the advantage of significantly higher information content compared to that of a password."*

## CA balanced view

Biometric readings, ranging from several hundred bytes to over a megabyte, bring in the advantage of significantly higher information content compared to that of a password or a pass-phrase and hence are stronger than that of a password or a pass-phrase. Additionally, because a biometric property is intrinsically that of an individual, it is difficult to surreptitiously duplicate and nearly impossible to share.

However, disadvantages include poor scalability and integration issues in technologically diverse organizations, although match-on-card technology can provide some mitigation. High cost of authentication devices remains a barrier to widespread adoption within larger organizations and there is always the risk to the security of the user, in addition to security of the material carried.

Other challenges for biometric systems include:

- Fake biometrics at the sensor:
  - o Re-submitting previously stored digitized biometrics signals
- Overriding the feature extraction process:
  - o Tampering with stored templates
  - o Attacking the channel between the stored templates and the matcher
- Overriding the final decision of biometric verification

## Which biometrics for banks?

Fingerprinting is the most commonly used biometric in the banking industry, deployed across functions:

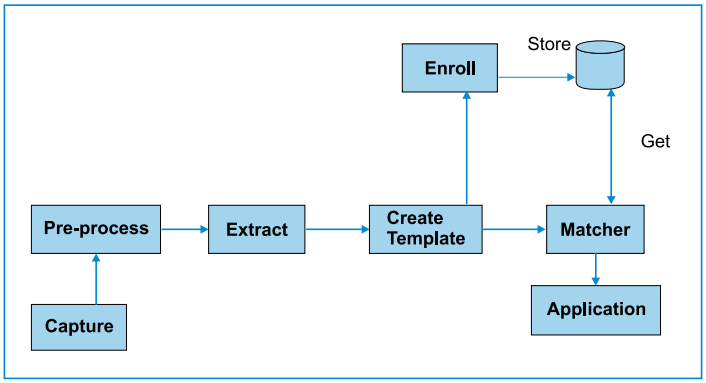
- Transaction security
- Network security
- Access control
- Background checks

Voice verification is also increasing in popularity, especially in the USA, as it works remotely over phone and mandates no additional hardware. Biometrics like signature and hand geometry are also rapidly gaining acceptance.

## Biometric systems at banks

| Type of Biometric | Bank | Purpose |
|---|---|---|
| Fingerprint | American Express | For physical access |
| Fingerprint | Bank of Central Asia | Teller verification |
| Fingerprint | Bank of Cairo Egypt | Transactions |
| Signature | Chase Manhattan USA | Document processing |
| Voice | InTrust Bank USA | Transactions |
| Voice | First Direct Bank - Israel | Account access/ pin or password reset |
| Fingerprint | Citibank Singapore | Payments systems - credit card holders to pay using their fingerprints |
| Fingerprint | Barclays Bank UAE | ATM |

## How biometrics work




**Capture:** Obtain relevant user data through sensors. Most times, this is an image acquisition system, but can change according to the characteristics desired.

**Pre-process:** Remove artifacts from the sensor, to enhance input (For example, removing background noise), or to use some kind of normalization.

**Extract:** The right features must be extracted optimally. A vector of numbers or an image with particular properties is used to create a template. A template is a synthesis of all the characteristics extracted from the source, in the optimal size to allow for adequate identification.

**Enrollment:** During enrollment, biometric information gathered from the individual in the form of a template is stored in a card or database or both.

**Verification/ Matching:** During verification, biometric information is detected and compared with stored information. The template obtained is passed to a matcher that compares it with other existing templates, estimating the distance between them using an algorithm. The matching program analyzes the template with input. This is then passed for a specified use or purpose.

It is crucial that storage and retrieval of such systems is secure if the biometric system is to be robust.

## Key performance measures for biometric identification schemes

| Measurement | Shorthand Acronym | Description |
|---|---|---|
| False Accept Rate or False Match Rate | FAR or FMR | The probability that the system incorrectly declares a successful match between the input pattern and a non-matching pattern in the database. It measures the percent of invalid matches. These systems are critical since they are commonly used to forbid certain actions by disallowed people. |
| False Reject Rate or False Non-Match Rate | FRR or FNMR | The probability that the system incorrectly declares failure of match between the input pattern and the matching template in the database. It measures the percent of valid inputs being rejected. |
| Receiver Operating Characteristic or Relative Operating Characteristic | ROC | In general, the matching algorithm performs a decision using some parameters (For example, a threshold). In biometric systems the FAR and FRR can typically be traded off against each other by changing those parameters. The ROC plot is obtained by graphing the values of FAR and FRR, changing the variables implicitly. A common variation is the Detection Error Trade-off (DET), obtained using normal deviate scales on both axes. This more linear graph illuminates the differences for higher performances (rarer errors). |
| Equal Error Rate | EER | The rate at which both accept and reject errors are equal. ROC or DET plotting is used because how FAR and FRR can be changed, is shown clearly. When quick comparison of two systems is required, ERR is commonly used. Obtained from the ROC plot by taking the point where FAR and FRR have the same value, the lower the EER, the more accurate the system is considered to be. |
| Failure to Enroll Rate | FTE or FER | The percentage of data input considered invalid and fails to input into the system. Failure to enroll happens when data obtained by the sensor is considered invalid or of poor quality. |
| Failure to Capture Rate | FTC | Within automatic systems, the probability that the system fails to detect a biometric characteristic when presented correctly. |
| Template Capacity | | The maximum number of sets of data which can be input into the system. |

## Types of biometric verification

**Match-on-card** - The biometric template (or reference pattern) is stored on the card, which must be a smartcard with computational capability. The biometric sample, obtained from the user to be verified, is matched against the template by the smartcard. Thus, the template never leaves the card. Precise Match-on-Card™ is a leading player in match-on-card technology.

*Advantages*

- No performance overhead of biometric samples sent out to server and verified
- Additional security and personalization since template is not transferred out of card

*Disadvantages*

- If an attacker gets access to the card contents (For example, a lost or stolen card), using the information, it is possible to create a forged card that can respond correctly to all cryptographic checks (For example, authentication by digital signature) while allowing template substitution (or in fact any user to be accepted)
- Requires larger more expensive cards with more extensive functionality (particularly processing capability, to deliver a response within a short time)
- Should multi-modal biometric combination be found desirable, the costs of executing this with match-on-card would be greater

**Match-on-station** - the template is stored on the card, which need only provide memory for storage. The template is transferred to the station (the biometric subsystem installed at the Point-of-Use, such as for passport control at an airport). It is matched there against the biometric sample obtained from the user.

*Advantages*

- No performance overhead of biometric samples being sent out to server and verified
- Cost is lesser than match-on-card

*Disadvantages*

- Attack of tampering with the station or making a modified station (For example, using knowledge of standards on card interfaces and contents), to expose the genuine template and reuse them

**Match-on-server** - the template is stored at the biometric server. The biometric sample obtained from the user is transferred to the server and matched against the template stored in the server for that user.

*Advantages*

- Cost is minimal
- Security vulnerabilities are not present (communication links need to be secured)

*Disadvantages*

- A reliable wide area communications system is required
- Performance overhead

## Future of biometrics

Fingerprint sensors may be a standard on PCs. Several brands of notebook computers are available with fingerprint sensors embedded.

Though more popular in Latin America and Asian countries, where there is less stigma associated with fingerprint and other biometrics, biometrics it yet to gain wider acceptance in the USA. A recent nationwide survey conducted by the Columbia University reported that 83 percent of people approve of the use of finger imaging, and do not feel it treats people as criminals.

## Conclusion

Biometrics is yet to be deployed in full-scale by the financial services industry. The cost of implementation and potential customer resistance are primary concerns. The most pervasive use of biometrics today appears to be associated with employees rather than customers. Experts expect that heightened concerns about financial fraud, combined with improvements in the technology's reliability through standards and compliance rules, will encourage more banks to join retailers, government agencies and other industries that have led the way in applying biometrics ▪

*"Experts expect that heightened concerns about financial fraud, combined with improvements in the technology's reliability, will encourage more banks towards applying biometrics."*

## References

1. http://en.wikipedia.org/wiki/Biometrics
2. http://www.iso.org/iso/catalogue_detail?csnumber=50145
3. http://www.matchoncard.com/?id=1333

**Preethi Thoppil**
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# Infosys in the news

### Infosys YoY Growth up 11.7%

Infosys Technologies Limited announced financial results for its fourth quarter ended March 31, 2009. Revenues for the quarter aggregated $1,121 million. Net income was $1,281 million ($321 million for the quarter ended March 31, 2008). 37 new clients and 4,935 new employees were added during the quarter. Infosys Technologies Limited announced fiscal 2009 revenues of $4,663 million; YoY growth of 11.7%.

### Infosys Technologies Cited as a Leader by Independent Research Firm

Citing highest client feedback scores and a "standout story" on innovation, Infosys Technologies Limited was named a leader in Global IT Infrastructure Outsourcing in the Forrester report, "The Forrester Wave™: Global IT Infrastructure Outsourcing, Q1 2009". The Forrester report states, "outstanding reference client scores - and a standout story on innovation for clients - gave Infosys a significant boost in the current offering rating." According to the report, "Infosys has made infrastructure services a strategic focus and the firm is clearly getting into good position to act on technology trends such as automation, standardization, consolidation, and virtualization…"

## Finacle – The Universal Banking Solution from Infosys

### The Co-operative Financial Services (CFS) selects Finacle from Infosys for Home-market Core Systems and Channels Transformation

CFS has chosen Finacle Universal Banking Solution to power its business transformation initiative. This initiative will also include the implementation of Finacle core banking, CRM (uniting CFS banking and insurance businesses) and e-banking solutions across the critical home-market operations of CFS in the UK. A strong customer focus and high operational excellence are vital as part of CFS's future development and growth strategies. The existing technology infrastructure while fit for purpose at present is considered unsuitable for future requirements and CFS has decided to replace the existing legacy systems with a world-class banking solution.

### BankDhofar selects Finacle from Infosys as Transformation Partner

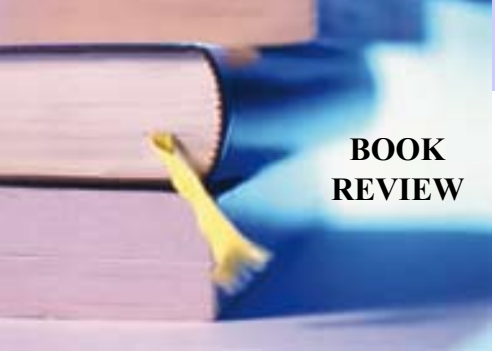
BankDhofar has selected Finacle Universal Banking Solution from Infosys for its transformation initiative. Infosys will implement Finacle core banking, Customer Relationship Management (CRM), treasury, e-banking and mobile banking solutions for the bank's operations. Finacle will play the critical role of transformation platform to help the bank streamline operational efficiencies and enhance customer service. Leveraging Finacle, the bank will seamlessly integrate its services across channels and provide customers innovative products with faster turn-around time and reduced total cost of ownership.

### Customer Speak

"The Enterprise Platform program is a strategic initiative for CFS and deploying the right technology is critical to creating a client-centric business based on our core principles of value, fairness and social responsibility."

**David Anderson**

*Chief Executive, The Co-operative Financial Services*





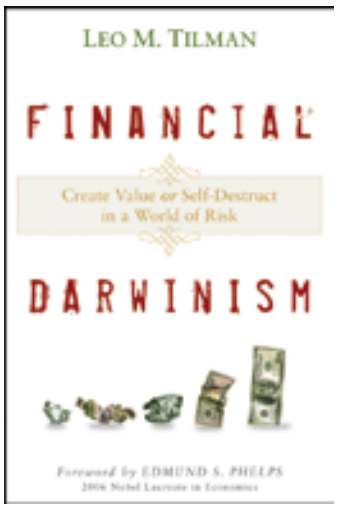

**Leo M. Tilman**

## Financial Darwinism

The first sentence of Anna Karenina, one of Tolstoy's best-known novels, famously observes that while "…all happy families are alike; each unhappy family is unhappy in its own way." And yet when it comes to "unhappy" financial institutions that suffered losses, assorted problems, or outright ruin in the past months, most of them were, in essence, 'Darwinian failures' that had a great deal in common.

The world of modern finance presents a landscape of significant uncertainty, but also of rapid innovation and opportunity. In *Financial Darwinism,* Leo M Tilman (President of L M Tilman & Co., a strategic advisory firm that serves governments, financial institutions, corporations, and institutional investors worldwide) analyzes the tectonic financial shift that has taken place over recent times and then comprehensively explores the challenges facing financial institutions – as well as the entire universe of their potential response.

The book starts by introducing Dynamic Finance – an evolutionary thesis about the origins, the drivers, and the implications of the ongoing financial revolution. Tilman then offers a concise new risk-based approach to thinking about economic performance. He details a practical decision-making framework he calls 'Financial Darwinism' designed to help financial institutions navigate the dynamic new world. With 'real life' examples presented in Chapter 5, one begins to explore the heart of the message. It convincingly presents the changed role of risk management as




it get elevated to the level of top executive decision making along with business strategy, corporate finance and investment activities. "It is no longer an afterthought or a passive safety-and-soundness verification after business decisions are made." Tilman emphasizes. As risk taking and risk management become explicitly linked to the process of economic value creation, the book designates a place for the executive charged with the responsibility for risk management alongside the executive management team.

As the world places increasing emphasis on fair evaluation, risk-based financial disclosure and risk-focused regulation, Tilman's *Financial Darwinism* can provide an invaluable roadmap to the new financial order, guiding CEOs and directors who must build risk evaluation into all fundamental decisions.

Of course, strategic management of real-world financial institutions is a complex and multi-faceted endeavor that spans business strategy, corporate finance and investment decisions along with risk management. *Financial Darwinism* alone will not ensure the survival of financial companies in today's environment. But it should certainly positively impact chances for success and help banks start thinking about how to create the competitive advantage they need.

*Financial Darwinism* is undoubtedly a book banking leaders can consider a risk-managed investment for their private office library shelves ▪

# Maximize innovation.

# Win in the flat world.

In the flat world, knowledge is no longer power. What differentiates leaders in the field from the rest is the way they transform information into innovative offerings.

Inflexible and obsolete legacy technology can seriously constrain banks from offering innovative products and adversely impact their speed of response.

Finacle from Infosys helps you win in the flat world by maximizing unlimited opportunities for growth, while minimizing the risks that come with large-scale business transformation. Global banks like ABN AMRO, ANZ, DBS, Credit Suisse, ICICI, State Bank of India and many others have leveraged the power of Finacle to get ahead in this globalized world.

To know how global banks have maximized their opportunities and minimized their risks to win in this flat world, visit us at www.infosys.com/finacle

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