

**E-Banking:  
Status, Trends, Challenges and Policy Issues**

**November 2003**

**MU Yibin  
Financial Economist  
The World Bank**

**Paper presented at CBRC Seminar  
The Development and Supervision of E-banking  
Shanghai, Nov. 24-26, 2003**

# **E-Banking: Status, Trends, Challenges and Policy Implications**

1. Introduction.....	1
2. Status .....	1
2.1. Definition.....	1
2.2. Fundamental characteristics .....	2
2.3. Levels/Scope of e-banking business .....	2
2.4. Current development situations (in industrial countries).....	2
2.5. Status in developing countries .....	3
3. Prospects--Impact of E-banking on traditional banking .....	3
3.1. The early conventional wisdom: .....	3
3.2. In reality, e-banking develops fast, but not damaging as conventional wisdom projected.....	3
3.3. Prevailing vision .....	4
3.4. Case-study--experience from the two most successful cases .....	4
3.5. Prospects .....	5
4. Trend: The major application of e-banking—SME finance .....	5
4.1. Obstacles to SME's access to finance.....	5
4.1.1. from banks' perspective .....	5
4.1.2. from SME's perspective .....	6
4.2. New Technology, New Hope for SME Finance .....	6
4.2.1. From bank's side, new technology (e-banking) makes SME finance economically possible .....	6
4.2.2. From SMEs' perspective.....	7
4.2.3. From the government's perspective .....	7
5. Challenges and policy implications .....	8
5.1. Cross-border e-banking activities and its policy implications .....	8
5.1.1. definition.....	8
5.1.2. Two scenarios .....	8
5.1.3. Raised many challenges and questions for banking regulatory authorities (both home and host).....	8
5.1.4. Its policy implications .....	9
5.2. From the society's perspective.....	10
5.2.1. Challenges .....	10
5.2.2. Policy implications .....	10
5.3. From bank's perspectives.....	10
5.3.1. Risk management challenges.....	10
5.3.2. Policy implications/recommendations .....	12
5.4. From the authorities' perspective (banking supervisor, central bank, related government depts.).....	13
5.4.1. Challenges from e-banking.....	13
5.4.2. Policy implications/recommendations .....	13
6. Some concluding thoughts .....	15
Reference .....	16

\*\*\*\*

# **E-banking: Status, Trends, Challenges and Policy Implications**

## **1. Introduction**

In addition to introduction (section I) and conclusion (section VI), the paper includes four sections. Section II addresses the definition and current situation of e-banking. Then, section III addresses the impact of e-banking on banking business. After that, section IV addresses the major application of e-banking. That is also the bottom line whether e-banking can be viable in a country. Section V addresses the new challenges e-banking has brought and policy implications from the perspectives of society, banks, and regulatory authority as well as government.

## **2. Status**

### 2.1. Definition

- The Internet includes all related web-enabling technologies and open telecommunication networks ranging from direct dial-up, the public World Wide Web, cable, and virtual private networks. (BIS-EBG, 2003)
- Internet banking (e-banking) is defined to include the provision of retail and small value banking products and services through electronic channels as well as large value electronic payments and other wholesale banking services delivered electronically. (BIS-EBG, 2003)

## 2.2. Fundamental characteristics

Comparison between the current round financial innovation (e-banking) and past financial innovations

	The current innovation (e-banking)	Past financial innovations
Content	Delivery channel innovation-- deliver banking business via internet.	Products and services, i.e., delivery, swap
Impact	Wider	Narrow

## 2.3. Levels/Scope of e-banking business

- **Basic information e-banking**/web sites that just disseminate information on banking products and services offered to bank customers and the general public;
- **Simple transactional e-banking**/web sites that allow bank customers to submit applications for different services, make queries on their account balances, and submit instructions to the bank, but do not permit any account transfers;
- **Advanced transactional e-banking**/web sites that allow bank customers to electronically transfer funds to/from their accounts pay bills, and conduct other banking transaction online.
- Usually, e-banking refers to types II and III.

## 2.4. Current development situations (in industrial countries)

- E-banking products and services are getting more and more advanced and increasing in variety. From providing information at the early stage to providing transactional activities.

- Both volume and share in the total banking business are getting bigger and bigger very fast (Graph, Europe)
- E-banking customer base is getting bigger quickly.

## 2.5. Status in developing countries

Developing countries are in catching up in e-banking:

- The average e-banking penetration for developing countries by the end of 1999 was close to 5% (World Bank Survey, 2001).
- In Brazil, the number of e-banking users reached 8 million in 2000.
- In Mexico, the number of e-banking users reached 1.25 million in 2000.
- In India, over 50 banks are offering online banking services. ICICI Bank's e-banking is very impressive.
- E-banking in Korea, Thailand, Malaysia, and Singapore, Hong Kong and Taiwan (China) is thriving.
- In Ghana and some other African countries, smart cards based on Visa Horizon proximately technologies are getting started.

## 3. Prospects--Impact of E-banking on traditional banking

### 3.1. The early conventional wisdom:

- Internet banking would destroy the traditional banking business model and promote the entry of newcomers from the outside of the banking industry.
- Developing countries could have the "opportunities to leapfrog" in the adoption of e-finance on a large scale.

### 3.2. In reality, e-banking develops fast, but not damaging as conventional wisdom projected.

- The notion of leapfrog has not worked in many developing countries due to various impediments. This can be verified by UNCTAD report. "Some positive signs are

already visible, including a high level of acceptance of technology by customers and financial institutions...H(h)owever, most projects have not yet been deployed on a large scale.” (UNCTAD 2002. It provides a comprehensive look at the status of e-finance in developing countries. It covers arrange of areas related to e-finance including e-banking, e-payments, e-trades, and e-credit information).

- Even in industrial countries, e-banking is still a complementary tools to traditional banking. Lots of pure e-banking businesses have been forced out of market.
- Internet-only banks have been substantially less profitable. They generate lower business volumes and any savings generated by lower physical overheads appear to be offset by other types of non-interest expenditures, notably marketing to attract new customers. (De Young 2001).

### 3.3. Prevailing vision

- The prevailing view today is that Internet banking can only succeed if it is thoroughly integrated within the existing banking infrastructure, which should combine “click” (e-banking) with “mortar” (physical branches) due to the importance of public trust in banks, the value of an established brand name, and the desire of customers to do something physically.
- According to this view, Internet is regarded simply as another distribution channel as a complement to physical braches, phone banking and ATM networks. The dominance of the so-called “click and mortar” model can be explained by its success on the ground. Two good examples are Wells Fargo in the US and Nordea in Scandinavia.

### 3.4. Case-study--experience from the two most successful cases

Two most successful examples:

- Wells Fargo (US), has actually the highest absolute number of online customers, more than 3 million out of its total 24 million customers in 2001.
- Nordea (Scandinavia), has 2.3 million online customers, representing over 20% of its total customer base. It has the highest share of online customers.

They share the following common elements:

- Both are leaders in their traditional markets and thus can capitalize on a sizable customer base.
- Furthermore, their customer base is technologically sophisticated. California and Scandinavia have extremely high rates of Internet use.
- Both are technologically advanced and started early in Internet deployment. Wells Fargo started e-banking business as early as in 1989.
- Both have tightly integrated Internet in their operations and their existing infrastructure.
- Both have large number of SME customer base.

### 3.5. Prospects

Bottom line: the ability to mainstream SME and individuals into E-banking.

## **4. Trend: The major application of e-banking—SME finance**

E-banking is used more and more for improving access to finance. Financial constraints for SMEs have never been effectively solved and have been thought inevitable. This section will cover the advantages of e-banking on this aspect.

### 4.1. Obstacles to SME's access to finance

#### 4.1.1. from banks' perspective

- High costs and low profitability of SME loans because of the small loan size.
- High risks of SME loans due to lack of business track record, credit history, and transparent information.
- Evaluating SME risk is “too labor-intensive” to be profitable.

- Many banks lack strategies and skills to tackle impediments associated with SME finance. In many developing countries, the staff of banks lack necessary skills to appropriately assess credit risks of SMEs

#### 4.1.2. from SME's perspective

- Inappropriate products and services, which are rigidly supply-driven instead of demand-driven. Commercial bank products are usually designed to meet the needs of large corporations; few products and service are specifically tailored to the needs of SMEs. SME sector is usually underserved.
- High interest rates. SMEs usually require much smaller loans than large enterprises. banks, therefore, usually charge high margins to cover the costs.
- Cumbersome procedures.
- Over insistence on collaterals and guarantees. SMEs usually have low-level of fixed assets and relatively high-level of working capital. Therefore, when lending to an SME, a bank needs to assess the SME's economic viability and future cash flows instead of collaterals. However, in many developing countries, banks are still in the very early stage of mastering sound lending policies and good credit practices. Their lending appears to simply rely on collateral rather than cash-flow projections. banks' lack of capacity of non-collateral credit assessment has caused them unable to provide lending services to SMEs.
- Inflexible credit criteria—one size fits all.

## 4.2. New Technology, New Hope for SME Finance

### 4.2.1. From bank's side, new technology (e-banking) makes SME finance economically possible

#### (i) lower operational costs of banks

- Automated process
- Accelerated credit decisions
- Lowered minimum loan size to be profitable

#### (ii) potentially lower margins

- Lower cost of entry
- Expanded financing reach
- Increased transparency

(iii) expand reach through self-service

- Lower transaction cost
- Make some corporate services economically feasible for SMEs
- Make anytime access to accounts and loan information possible

#### 4.2.2. From SMEs' perspective

E-banking business makes access to finance from banks attractive. SMEs have benefited from the development of E-finance and gradually stepped out of the informal sector. In particular, E-finance offers the following attractive benefits for SMEs:

- Ease of use
- Lower costs of financing
- Convenience
- Time savings
- Operational efficiency

#### 4.2.3. From the government's perspective

New technologies have provided the incentives/benefits for the government to improve SME finance by

- Increasing employment.
- Contributing to poverty reduction.
- Contributing to economic development.
- Reducing the informal sector and cash economy<sup>1</sup>.

---

<sup>1</sup> Lack of SME's access to FIs is one of the major reasons why there are usually big informal economic sector (cash economy) in many developing countries. Improved SME access to formal financial institutions is expected to reduce the informal economic sector.

## 5. Challenges and policy implications

### 5.1. Cross-border e-banking activities and its policy implications

#### 5.1.1. definition

- Definition: Cross-border e-banking is defined as the provision of transactional on-line banking products or service by a bank in one country to residents of another country. (BIS, 2003)
- A note on the definition: A bank delivering its e-banking activities via its physical branches/ subsidiaries in a host country does count into cross-border e-banking.
- A further note: banks can use the new delivery channel (e-banking) reach customers in another country without as much reliance on physical presence and the significant investment that it entails (example).

#### 5.1.2. Two scenarios

- The in-out scenario—In-country institutions providing banking services to customers outside the home country.
- The out-in scenario—institutions based outside the home country providing banking services to parties within the home country.

#### 5.1.3. Raised many challenges and questions for banking regulatory authorities (both home and host)

- Who should take the supervision responsibility? Borderless nature of e-banking increase the potential for jurisdictional ambiguities with respect to the supervisory responsibilities of different national authorities. Such situations could lead to insufficient supervision of cross-border e-banking activities.
- Does it need to be licensed?
- Banks that engage in cross-border e-banking may face increased legal risk. Specifically, unless banks conduct adequate due diligence they run the risk of potential non-compliance with different national laws and regulations, including

applicable consumer protection laws, record-keeping and reporting requirements, privacy rules, AML rules.

- Non-banks may offer with greater facility bank-like services without any type of supervisory approval or oversight due to definitional ambiguities that may exist with regard to what constitutes a bank (or banking services).
- Which country's law applies to cross-border e-banking activities.
- Role and responsibilities of the home country banking supervisor and local supervisor.
- Supervisors need to recognize that the Internet allows for the provision of e-banking services that can span geographic borders and potentially call into question existing jurisdictional authorization requirements and the regulatory processes;
- Supervisors need to recognize the implications of taking a restrictive approach toward currently regulated banks without an even-handed treatment of foreign organizations that may conduct identical or nearly identical activities via the Internet in the local jurisdiction.
- Supervisors should ensure that banks appropriately manage the legal uncertainty during the period while the legal infrastructure for cross-border e-banking remains under construction.

#### 5.1.4. Its policy implications

- **Policy goal:** The objective of both the host and home supervisors should be to avoid or minimize legal risks stemming from jurisdictional ambiguities, and to ensure that e-banking activities are adequately supervised with clearly defined supervisory responsibilities.
- **Basic principle:** Focus attention on the need for effective home country supervision of cross-border e-banking activities on a consolidated basis as well as continued international cooperation between home and local banking supervisors regarding such activities given the possible absence of a physical banking presence in local jurisdiction. Such as focus is essential to promote safe and sound cross-border e-

banking without creating undue regulatory burden or impediments to banks' use of the internet delivery channel to meet customer needs.

- **Complementary principle:** Home supervisors should provide host supervisors with clear information on how they oversee a bank's e-banking activities on a consolidated level. Host supervisor would generally rely on the home supervisor to effectively carry out its supervisory program. Where there are concerns about the effectiveness of a home supervisor's oversight program, the host would approach the home supervisor on a bilateral basis. The host supervisor will need to consider what actions may be appropriate to protect local residents and their banking system.
- **Cooperation among national supervisors.** Rapid pace of development of e-banking and the associated risks will require supervisory agility, resources and, in the cross-border context, cooperation between home and host supervisors.

## 5.2. From the society's perspective

### 5.2.1. Challenges

1. Theft of personal identity
2. Privacy issues
3. Who take the responsibility in case of fraud

### 5.2.2. Policy implications

1. Essential are efforts to define the privacy framework and to use technology to solve contract enforcement problems.

## 5.3. From bank's perspectives

### 5.3.1. Risk management challenges

- **Adaptation to Technology issues:** The speed of change relating to technological and customer service innovation in e-banking is unprecedented. This intensifies challenges to the management to ensure that adequate strategic assessment, risk

analysis and securities reviews are conducted prior to implementing new e-banking applications.

- **Outsourcing issue:** E-banking increase banks' dependence on information technology, thereby increasing the technical complexity of many operational and security issues and furthering a trend towards more partnerships, alliances and outsourcing arrangements with third parties, many of whom are unregulated.
- **Increased legal and reputational risks**
- **E-security issue:** The internet is ubiquitous and global by nature. It is an open network accessible from anywhere in the world by unknown parties, with routing of messages through unknown locations and via fast evolving wireless devices. Therefore, it raises significant challenges on security controls, customer authentication techniques, data protection, audit trail procedures, and customer privacy standards.
  - While companies have been keen to embrace the potential offered by these technologies, few understand the inherent vulnerability and risks associated with e-finance. Since 1999, Brazil has seen a 418% increase in electronic security incidents; Korea has seen a 932% increase and Japan has seen over 1000% increase in malicious electronic security incidents (Tom Glaessner et al, 2003).
  - Over 57% of all hack attacks in 2002 were initiated against the financial sector (Tom Glaessner et al, 2003).
  - Identity Theft has exploded and incidents are expected to reach almost 2 million per year by 2005 with a cost of almost US\$10 billion.
- **Outsourcing issue:** E-banking increase banks' dependence on information technology, thereby increasing the technical complexity of many operational and security issues and furthering a trend towards more partnerships, alliances and outsourcing arrangements with third parties, many of whom are unregulated.
- **Increased legal and reputational risks**

### 5.3.2. Policy implications/recommendations

1. Establish a comprehensive security control process.
  - Authentication of e-banking customers
  - Appropriate measures to ensure segregation of duties
  - Establishment of clear audit trails for e-banking transactions
  - Non-repudiation and accountability for e-banking transactions
2. Centralized-back office to free staff time in sales and services areas and to consolidate process consistently across the organization.
3. Develop automated credit authorization system by developing appropriate credit scoring system and cash-flow scoring system to reduce operating costs, improve asset quality, and increase client profitability. One of the major benefits of credit scoring system is that lenders can make credit decisions without necessarily obtaining financial statement, credit reports, or other time-consuming and hard-to-get information. In particular, the financial statements of SMEs are often not complete and difficult to get. Banks can more closely align their specific credit policies and marketing strategies with the analytics, making the decision process more cost-efficient. (I.e., Fair, Isaac has developed a credit scoring system specialized in SME finance—SBSS 5.0 (small business scoring services), which has been increasingly used by many banks as their SME credit decision making model.)
4. Comprehensive due diligence and management oversight process for outsourcing relationships and other third-party dependencies.
5. Integrate cross-border e-banking risks into the bank's overall risk management framework.
6. Legal and reputational risk management
  - Appropriate disclosures for e-banking services
  - Privacy of customer information
  - Capacity, business continuity and contingency planning to ensure availability of e-banking systems and services
  - Incident response planning.
  - Segregation of duties

- Due diligence on risk assessment

5.4. From the authorities' perspective (banking supervisor, central bank, related government depts.)

#### 5.4.1. Challenges from e-banking

1. Oversight of outsourcing and partnership arrangements, and the oversight of security and data integrity and controls and safeguards, especially when the supporting operations are located in another jurisdiction .
2. The ability to adopt global technology to the local requirements: A adequate level of infrastructure and human capacity building are required before developing countries can adopt the global technology for their local requirements.
3. The ability to create the necessary level of regulatory and institutional frameworks: The lack of regulatory frameworks, trust, security and privacy standards, high trade barriers, customer and investor protections impede progress in many developing countries to implement e-finance projects.
4. E-security challenges

#### 5.4.2. Policy implications/recommendations

1. Improve system infrastructure environment for e-banking business
  - Strengthen payment system (including RTGS, bulk/low value payment system).
  - Improve the settlement system (e.g., for credit cards and other forms of electronic transactions).
  - Build-up transaction reporting/reconciliation services.
  - Establish credit information registry and disseminating system. Credit information registries, commonly known as credit bureaus in many countries, can reduce the extent of asymmetric information by making a borrower's credit history available to

potential lenders. Lenders armed with this data can avoid making loans to high risk customers, with poor repayment histories, defaults, or bankruptcies. Once a lender makes a loan, the borrower knows that their performance will be reported to the credit bureau. The information contained in a credit registry becomes part of the borrower's "reputation collateral"; late payments or defaults reduce the value of this "collateral" providing an additional incentive for timely repayment. At the same time, by reducing the information monopoly that banks have over their existing borrowers, customers also benefit.

- Set up registers for fixed and movable collateral.
- Improve telecommunications infrastructure. Many new products and delivery channels suitable for SME finance rely on modern telecommunications infrastructure. It becomes very important to advance telecommunications infrastructure in developing countries.

## 2. Create an enabling policy and regulatory environment for e-banking

- 
- Strengthen the protection of the creditors' rights. Enact laws and regulations related to protection of creditor's rights and financial contracts.
- Improve judiciary and contract enforcement system.
- Bank supervisor should work in collaboration with private sector banking industry groups in identifying risk management guidance and industry standards that can facilitate the development of e-banking within prudent risk parameters without unduly constraining its innovation.

## 3. Build up a comprehensive e-security public policy framework.

There is a strong public interest case for government to regulate the e-finance industry.

- Internet-based transactions require their own security measures for which private solutions may not be sufficient. For example, government actions are needed to set up a framework for digital signatures and to designate agencies or processes to authenticate public keys associated with transactions.
- Telecommunications industry and financial services sector are crucial components of the critical framework.
- The reach of the internet and technologies imply that financial services are increasingly borderless and global. Hence mitigating electronic security risks requires unprecedented efforts to promote collective action within countries (e.g., inter-agency and public-private sector cooperation) as well as across countries by market participants, regulators, and law enforcements.
- E-security is a risk management problem. Balance safety and privacy protection.

## **6. Some concluding thoughts**

- E-banking can not only improve the access to finance, particularly for SMEs, but also allows access to finance with better and more competitive rates.
- Use online banking as new delivery tools to improve access to finance and alleviate financial constraints.
- As a regulatory authority, focus on core principles and Basle capital accord

## Reference

1. UNCTAD 2002, E-finance for SMEs: Global Trends and National Experiences.
2. BIS 2003, Management and supervision of cross-border electronic banking activities.
3. BIS 2001a, Risk management principles for electronic banking.
4. BIS 2001b, Electronic Finance: A new perspective and challenges.
5. BIS 2000, Electronic Banking Group Initiatives and White Papers.
6. OECD 2001, Electronic Finance: Economics and Institutional Factors
7. Tom Glaessner, Tom Kellermann, and Valerie McNevin 2003, Electronic security, risk mitigation in financial transactions.
8. :Kenneth Kerr, 2002, Usage of New Technologies for SMB Financing
9. Yibin Mu October 2003, A Framework for SME Finance (draft).
10. Robert De Young 2001, The financial progress of pure-play internet banks