



Canadian Banking Evolution

Technology and Banking

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Purpose of this Presentation

- ❑ Provide an Overview of the Canadian Banking Competition:
 - ❑ New Developments
 - ❑ Canadian competitors
 - ❑ Indicators of competition
 - ❑ Household financial assets
- ❑ Technology and Banking
 - ❑ Provide a technological advances in Canada - an explosion of technology
 - ❑ What technologies mean for consumers
 - ❑ Canadians' primary methods of banking
 - ❑ How Canada and USA invest in new technologies
- ❑ Electronic Banking
 - ❑ An overview of electronic banking
 - ❑ Transaction volumes for select delivery channels
 - ❑ Email Money transfers
- ❑ Security and Banking
 - ❑ What's online banking security
 - ❑ How to enable the security
- ❑ Proven Technologies
 - ❑ Describe the proven technologies used in Canada so far
- ❑ Live Demo
- ❑ Question Time

Competition in the Financial Services Sector

Competition overview

New Developments:

- A full range of financial products and services from a variety of suppliers. Increasing competitiveness in the market for financial products and services is attributable to at least three major developments:
 - A Bank may own an investment or mutual fund company
 - More recent changes to allow foreign banks to operate in Canada
 - Innovations in technology:
 - Have enabled financial institution to offer more products and services in new ways
 - Have triggered the new emergence of new types of competitors
 - Monoline credit card issues: Capital One Bank, MBNA Canada
 - Virtual Bank
 - Electronic Banking, etc

Competition in the Financial Services Sector

Competition overview

The Competitors:

- Competitors in Canadian Financial Services Sector includes :
 - Canada's six largest domestic banks
 - 12 smaller domestic banks
 - 31 foreign bank subsidiaries
 - 22 branches of foreign banks (18 full-service branches and four lending branches)
 - 25 trust companies
 - Over 100 life insurance companies
 - Over 1,300 credit unions and caisses populaires
 - Over 150 investment dealers
 - 55 mutual fund companies
 - 69 pension fund managers
 - Over 4000 independent financial, deposit and mortgage brokers
 - Over 6550 financing firms with assets over 5 million dollars
 - Others

Competition in the Financial Services Sector

Competition overview

Indicators of Competition:

- Three key indicators of competition are :
 - Access
 - Price
 - Choice
- Interest rate spreads:
 - What is an interest rate spread?
 - The difference between the interest rate a financial institution charges on loan to its borrowing customers and the interest rate it pays to its depositing customer
 - Good measure of financial sector competition
 - Competition resulting in narrowing interest rate spread
 - According to the World Economic Forum's 2003-2004 Global Competitiveness Report:
 - Interest rate spreads in Canada in 2002 are among the lowest in the Organisation for Economic Cooperation and Development (OECD) countries
 - 1% lower than in the US
 - Over 3% lower than in Australia
 - About 5.5% lower than in Germany

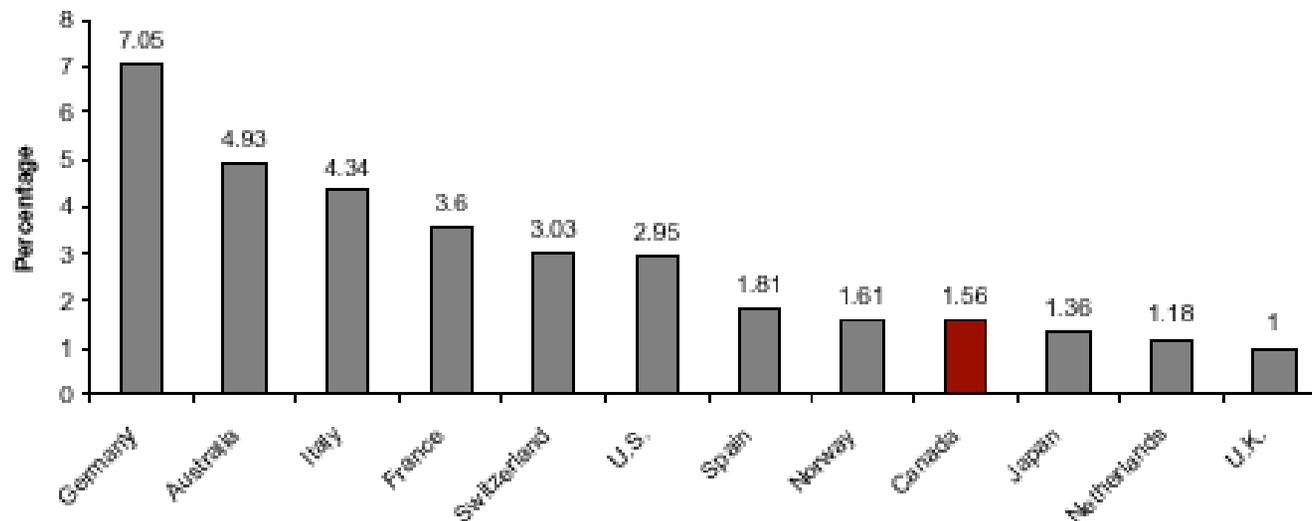
Competition in the Financial Services Sector

Competition overview

Indicators of Competition:

- Interest rate spreads:

Interest Rate Spreads 2002



Source: World Economic Forum, The Global Competitiveness Report, 2003-2004

Competition in the Financial Services Sector

Competition overview

Household financial assets:

- Another way to measure the degree of competition in financial services sector
- Statistics Canada defines household financial assets to include:
 - cash
 - deposits
 - securities
 - mutual funds
 - life insurance
 - pensions
 - current accounts
 - savings
 - investment holdings of Canadians
- Statistics Canada's National Balance Sheet Accounts show that:
 - Canadians rely on a wide variety of Financial Institutions to manage their household financial assets.
 - 32% of household financial assets are held by banks,
 - 13% by life insurance companies, and
 - 65% are held by other financial services providers such as pension and mutual funds, demonstrating a high level of competition in the Canadian

Competition in the Financial Services Sector

Competition overview

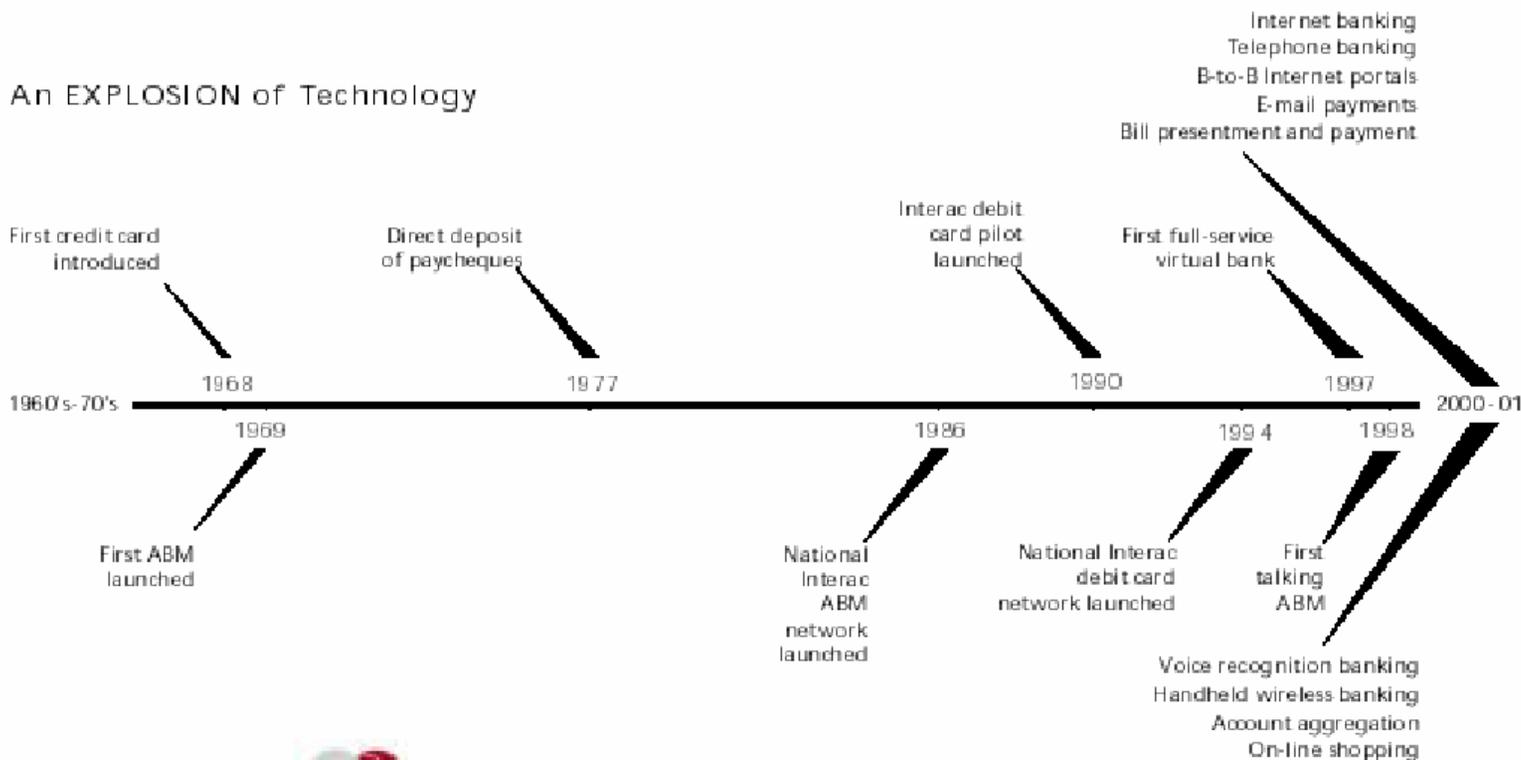
Choice:

- A wide range of choices from a number of large competitors
- Number of large competitors:
 - Nine large full service financial groups:
 - Three life insurance financial groups
 - Great West Lifeco/Investors Group
 - Manulife Financial
 - Sun Life Financial
 - 5 major banks
- 8 Top large Market Capitalization (\$ Billion at July 2, 2004 from Canadian Banker Association)
 - Manulife Financial + John Hancock \$43.9
 - RBC Financial Group \$38.6
 - Scotiabank \$36.1
 - Great-West Lifeco + Investors Group \$30.1
 - TD Financial Group \$28.1
 - BMO Financial Group \$26.8
 - CIBC \$23.8
 - Sun Life Financial \$23.1

Technology and Banking

Technological advances in Canada – A chronology

An explosion of technology:



CANADIAN BANKERS ASSOCIATION

Building a Better Understanding



Technology and Banking

What Technology Means For Consumers

Technology offers Canadian consumers:

- Convenience
- Choice

Advances in technology:

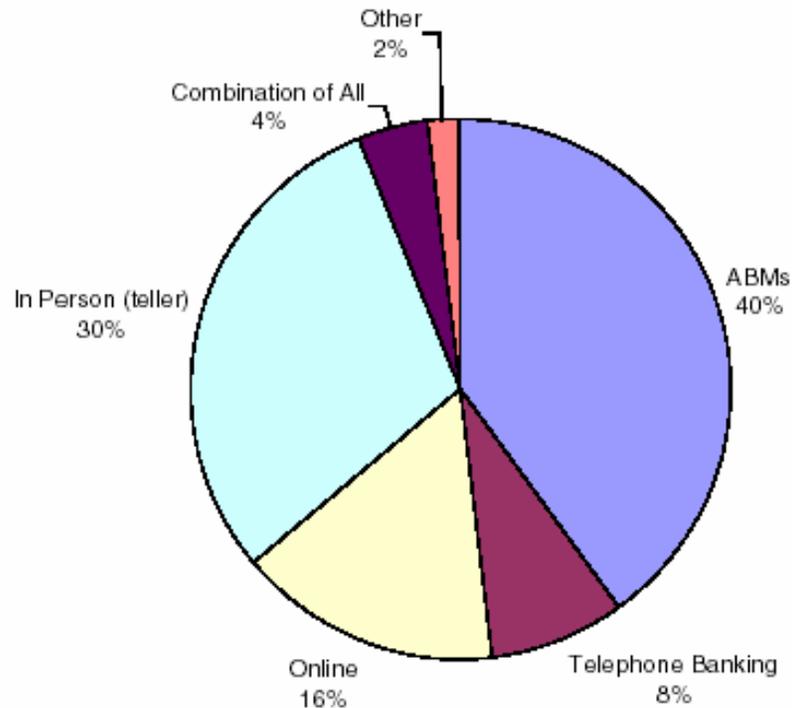
- dismantle geographic barriers
- access financial services virtually anywhere, at any time
- benefit from greater competition, as businesses such as virtual banks and monoline credit card issuers use technology to offer niche services

Technology and Banking

What Technology Means For Consumers

Canadians' Primary Method of Banking:

Canadians' Primary Method of Banking



Technology and Banking

Investments in New Technology

Investing in new and improved technology:

- Canada's six largest banks (CBA)
 - Collectively spent \$3.9 billion on technology in 2003, more than double the \$1.8 billion in annual technology spending seven years ago
 - Since 1996, has a cumulative total of almost \$25 billion on technology
- US two big banks - Citigroup and J.P. Morgan Chase (CBA)
 - each invested almost twice as much as Canada's six largest banks combined in 2002
 - U.S. banks collectively spent \$34 billion US on technology in 2002

Bank pursuing strategic opportunities:

- to build greater size and scale (failed to merge attempt: BMO, RBC, ROBC, TD)
- high costs of investment can be spread over a larger revenue base



Electronic Banking

Electronic Banking Overview

Overview

- Interac Direct Payment
 - A service that allows customers to use their banking cards to pay for purchases at retail stores
- Automated Banking Machines (ABMs)
- Telephone Banking
- Internet Banking
- Mobile banking services
 - Digital cell phones
 - Wireless devices
- *Interac* Email Money Transfers introduced in 2002
 - 5 major banks

Electronic Banking

Transactions Distributions

CANADIAN BANKERS ASSOCIATION

PUBLIC

Select Delivery Channel Statistics - Transaction Volumes

DELIVERY CHANNELS	Number of transactions (in millions)					% change 2002-2003
	2003	2002	2001 ^r	2000 ^r	1999 ^r	
ABM	1,131.8	1,206.6	1,209.0	1,239.4	1,156.5	-6.2%
Deposits	258.9	249.2	249.9	244.5	214.9	3.9%
Withdrawals	765.0	848.6	846.2	875.1	838.8	-9.8%
Transfers	43.2	43.7	45.4	48.5	42.4	-1.1%
Bill Payments	64.7	65.1	67.5	71.3	60.3	-0.7%
DEBIT CARDS	1854.7	1,749.6	1,590.6	1,289.8	N/A	6.0%
POS Purchases	1854.7	1,749.6	1,590.6	1,289.8	N/A	6.0%
PC/INTERNET BANKING	192.1	147.0	100.9	47.2	26.6	30.7%
Transfers	57.0	43.3	29.0	10.5	6.4	31.7%
Bill Payments	135.1	103.7	71.9	36.7	20.2	30.3%
TELEPHONE BANKING	87.7	92.1	94.6	74.0	63.4	-4.8%
Transfers	18.8	17.3	17.0	16.1	13.7	8.6%
Bill Payments	68.9	74.8	77.6	57.9	49.7	-7.9%

^r = revised

Notes

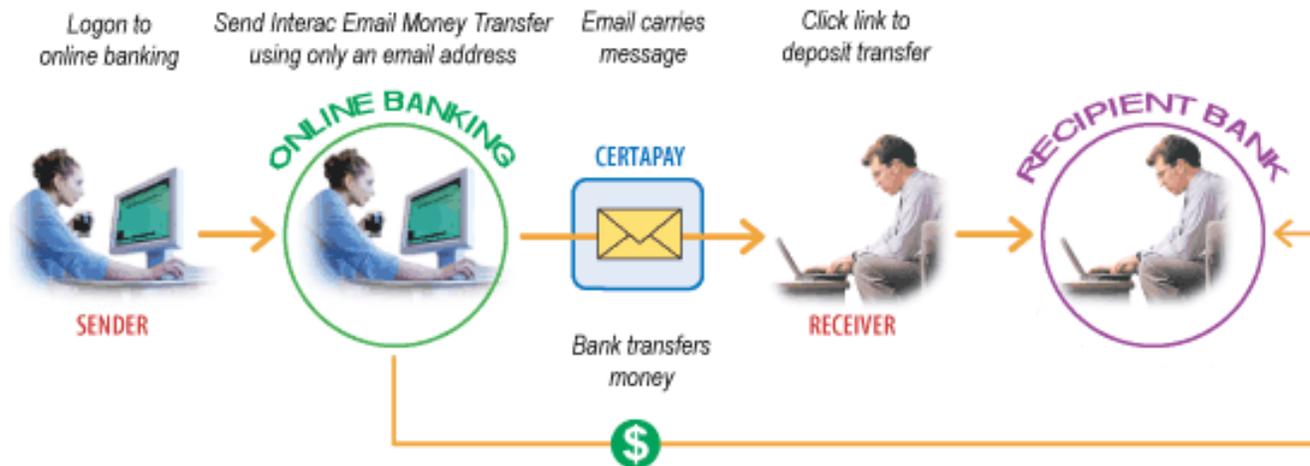
Six Banks are: BMO Financial Group, CIBC, National Bank, RBC Financial Group, Scotiabank and TD Financial Group

Electronic Banking

Email Money Transfers

Email Money Transfers

- Email Money Transfers let you send and receive money as fast as email - right out of - or right into - your bank accounts
- *Interac* Email Money Transfers introduced in 2002
 - 5 major banks
- How it works?



Electronic Banking

Email Money Transfers

How to work?

- Canada's six largest banks





Security and Banking

Online Banking Security and Privacy

What's online banking security?

- The general concept of security involves three things
 - Assets (something financially or operationally important to the electronic banking that you want to protect);
 - Vulnerabilities (a weakness that would expose assets to harm); and
 - Threats (viruses, hackers, unauthorized access, denial of service, data modification, theft, etc)

What's the purpose of security?

- to protect assets by addressing the following issues:
 - Authentication (ensuring people are who they say they are);
 - Data integrity (ensuring that data is accurate and up to date);
 - Confidentiality (ensuring that only authorized personnel have access to data under the conditions that they are authorized to use or view the data); and
 - Digital signature, also known as non-repudiation (ensuring that data can be verified as to who created/authorized the data)

Security and Banking

Online Banking Security and Privacy

What's privacy?

- The Canada federal government's Personal Information Protection and Electronic Documents Act defined:
 - privacy encompasses the rights and obligations of individuals and organizations with respect to the collection, use, disclosure and retention of personal information

How to secure online banking?

- Network and infrastructure security
- Application level security
- Transaction security - HTTPs via Secure Sockets Layer (SSL) protocol

How to access online banking services?

- An account holder must use a password and a client card to identify themselves
- Information passed around is encrypted by means of a complex mathematical algorithm

How to guarantee the privacy?

- Encryption
- Web Services Security

Proven Technologies

What kind of technology

Most proved technologies used in the financial services:

- Java, J2EE, EJB

Other Technology

- .NET
- Digital Ink (Allstream)

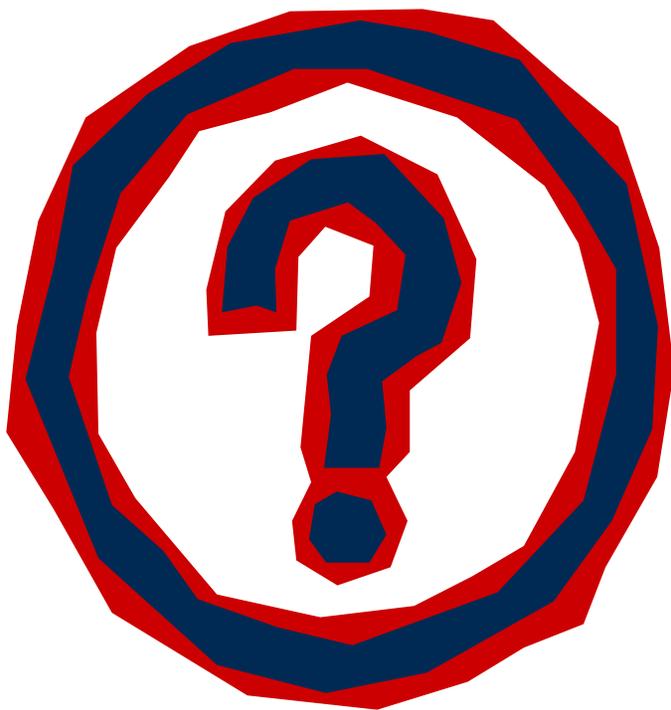


Finally...

- ☑ Provide an Overview of the Canadian Banking Evolution:
 - ☑ Provide background of banking competition
 - ☑ Illustrate the indicators of competitions
- ☑ Hopefully answer the question: *“Why technology changes the today’s banking?”*
 - ☑ What are various banking channels
 - ☑ Detail Email money transfers
- ☑ Some facts regarding Electronic banking in Canada
 - ☑ Provide historical data in Canadians’ banking for reference
 - ☑ Describe various banking channels
- ☑ Security and banking:
 - ☑ Provide an overview security and privacy for online banking
 - ☑ Describe the common mean for online banking security
- ☑ How to explore the possibility of using the proven technology in China:
 - ☑ Proven technologies used in Canadian financial services sector
 - ☑ How to use the proven technology?
- ☐ **Live Demo**

Q & A:

Question Time:



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