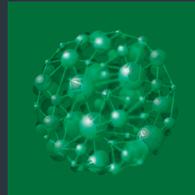
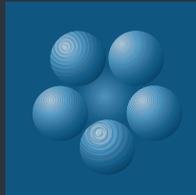


# Technology and Innovation in Financial Services: Scenarios to 2020



The views expressed in this publication do not necessarily reflect the views of the World Economic Forum.

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## Section

## 1

# Preface

Technology and innovation are transforming the financial services industry. Change is rapid. Business leaders cannot afford to focus only on current trends; they must also form a picture of the longer term. How will technology and innovation reshape the industry over the next 14 years? What types of innovation will emerge? Who will lead them? Will new players appear? Where? How will market and regulatory environments evolve?

To explore these issues, the World Economic Forum and representatives of the financial services, information technology and telecommunication communities set out to develop scenarios for the future of financial services and how they might be affected by innovation. The objective of these scenarios is to explore how innovation will transform access to, and delivery of, financial services by the year 2020.

The scenarios are the joint creation of those who contributed to the project. They extend beyond the assumptions and perspectives of any individual, interest group or organization.

## What are scenarios?

Scenarios are stories about the future. Good scenarios are plausible, challenging and rigorously constructed to address the most critical questions faced by decision-makers. The scenarios presented in this publication were developed over the course of a year in workshops at Davos, San Francisco, London, Boston, Tokyo and New York. They synthesize the perspectives of many leaders in business, society, government and academia from Asia, Europe and North America.

For a topic as diverse as innovation in financial services, no single set of scenarios can claim to describe all possible futures. Each story that has emerged describes a different, plausible future of the financial services industry from an innovation perspective. They are not predictions but possibilities and are intended to provoke readers, challenging their assumptions about what may happen and providing a useful shared basis for debate.

In developing these scenarios, the Forum called upon senior executives from leading global companies, as well as thought leaders, scenario planners and relevant public figures. Together they identified the following key questions:

- **How will the globalization of financial services evolve? Will it be further supported by governments and regulators? What outcomes will we see in the next decade?**
- **Will innovation be incremental or fundamental, will it be driven by traditional or new players, and what types of innovation will we see – for example, in products and services, distribution and sales channels, operations, and new business models?**

### How will these scenarios be used?

Leading global companies often develop large-scale scenarios to help formulate their business and investment strategies. Specifically, scenarios:

- **Make strategies more robust** by identifying and challenging underlying assumptions – thus helping corporations prepare stronger preventative measures.
- **Allow for better strategic decisions** by discovering and framing uncertainties in ways that improve the understanding of risks prior to making substantial, irreversible commitments.
- **Raise awareness of the business environment** by improving understanding of the complex interplay of underlying drivers and critical uncertainties while increasing sensitivity to weak signals that can herald significant change.
- **Provide impetus for current action** by giving users common languages and concepts for discussing current strategies across various sectors in a non-threatening context of possible futures.
- **Improve reaction time to unexpected events** by visualizing possible futures and mentally rehearsing responses, thereby raising the state of preparedness and agility.

The World Economic Forum is an independent international organization committed to improving the state of the world by engaging leaders in partnerships to shape global, regional and industry agendas. The Forum is impartial and not-for-profit; it is tied to no political, partisan or national interests. Our members are innovative and inspiring individuals who challenge conventional thinking and are committed to improving the state of the world. We also work closely with leaders from academia, government, religion, the media, non-governmental organizations and the arts.

As such, the Forum is ideally positioned to convene the diverse group of international players necessary to ensure the elaboration of robust scenarios. The Forum intends to use these scenarios to communicate a shared understanding of innovation in financial services. They will help to leverage technology and initiate dialogue and action at the international level. Through interactive sessions at various conferences and workshops held throughout the year, including the Annual Meeting at Davos, World Economic Forum Industry Partners will debate issues related to innovation in financial services, and directly communicate both their aspirations and concerns with key decision-makers. Media participants will disseminate the outcomes around the world.

We hope that these scenarios will spur action. The decisions we make today create the world we will live in tomorrow – and these scenarios raise crucial questions about the strategic decisions that will shape the future of the financial services industry.

### Conclusion

We hope that the scenarios will be used widely by the financial services, information technology and telecommunication communities, encouraging people to engage in a productive discussion of their vision of the future, helping them to identify risks and opportunities, and to develop more robust strategies.



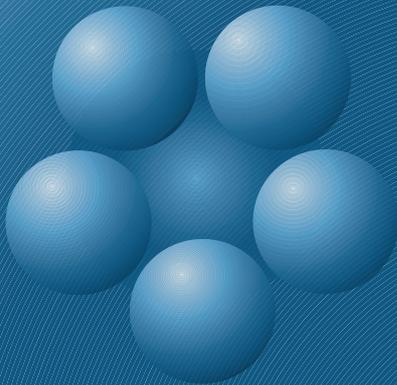
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Managing Director  
World Economic Forum



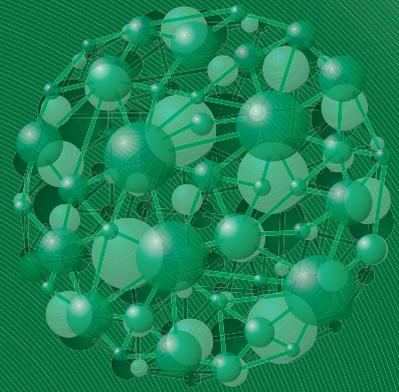
Section

# 2 Executive Summary

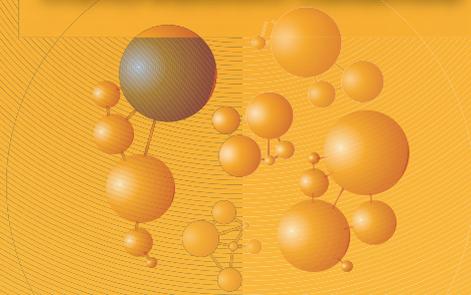
Global Ivy League



Next Frontier



Innovation Islands



Back to the past

Business as usual

Leap-frogging

## Section

## 2

## Executive Summary

Innovation has already transformed the financial services (FS) industry. Fourteen years ago, who expected the massive growth of e-banking and e-brokerage? Who envisioned the entry of new players such as retailers and telecommunications providers into financial services arena thanks to their ability to harness the power of innovative technology? Who predicted that technology would enable outsourcing and offshore contracting of core financial processes in low-cost countries such as India?

The business environment continues to change today, and the financial services sector needs to confront many issues to remain competitive. In particular, technology and innovation are board-level issues; they create opportunities and pose threats.

**Examples of opportunities:**

- to make significant improvements in operational efficiency by optimizing processes and operating models
- to obtain better insight into customer needs and therefore opportunities to devise better service packages
- to explore the potential for customization and personalization of offerings
- to ensure broader access to financial services in emerging and developing countries (e.g. mobile banking)
- to ensure broader access to premium services
- to ensure more effective risk management (e.g. credit risk, operational risk, capital market risk)

**Examples of threats:**

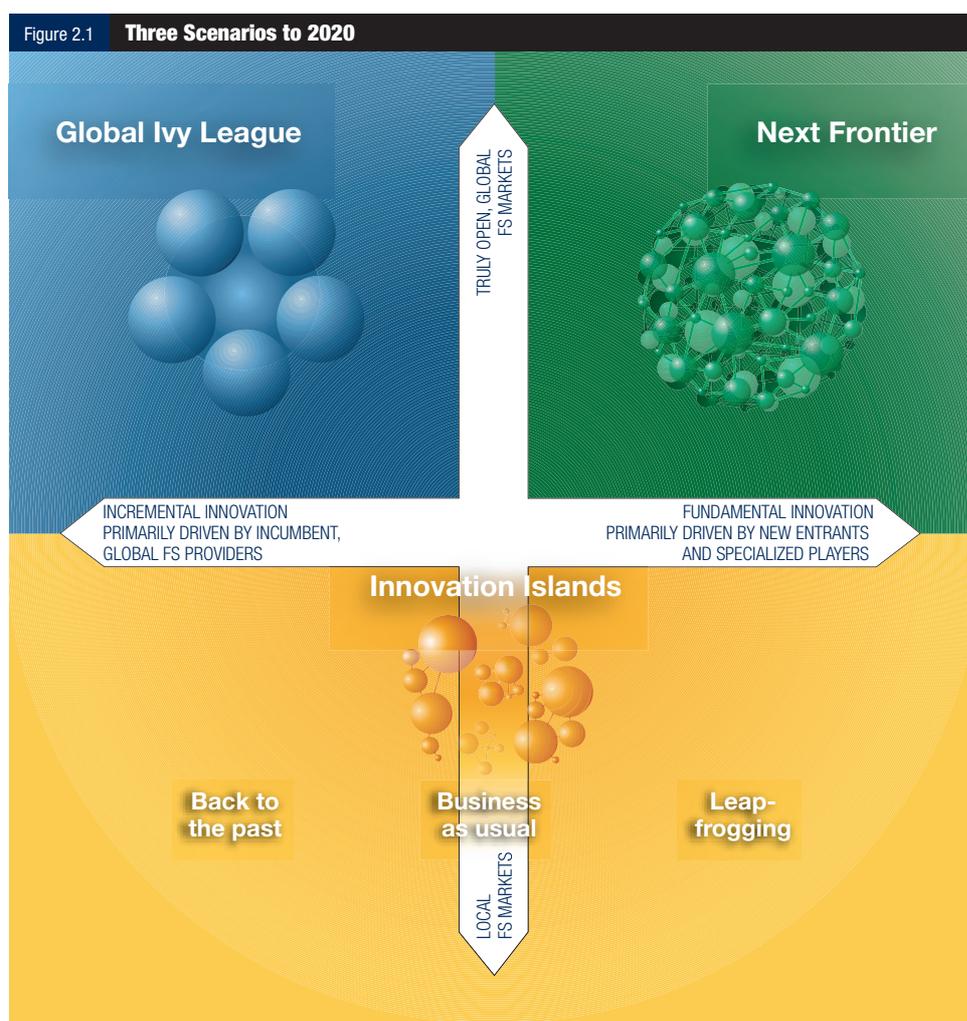
- Increased competition as the world becomes an increasingly level playing field. New and stronger competitors emerge, such as non-traditional players who may enter the FS arena, specialized players, and international companies from emerging countries
- Commoditization of services and related price pressures
- Increasing risks such as online fraud and threats to data security
- Empowered consumers who exhibit less brand loyalty

**The key questions for the scenarios**

From the many key drivers (listed in Annex 1), project participants – in particular, leading industry representatives – identified two crucial groups of questions. The answers to them will provide insight into the future of financial services and describe how technology and innovation will transform both access to and delivery of financial services by the year 2020. They are:

- **How will the globalization of financial services evolve? Will it be further supported by governments and regulators? What outcomes will we see in the next decade?**
- **Will innovation be incremental or fundamental? Will it be driven by traditional or new players? What types of innovation will we see – for example, in products and services, distribution and sales channels, operations, and new business models?**

Project participants worked from these questions to develop three very different but plausible scenarios of the future of financial services over the next 14 years. They are represented in figure 2.1 on globalization and innovation axes.



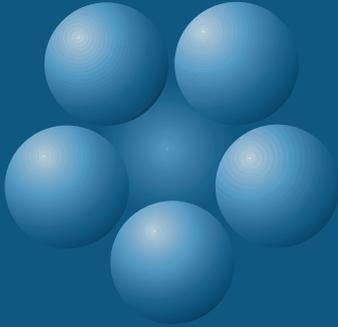
**Global Ivy League** explores a world in which innovation is primarily driven by large global financial service providers. This results in mostly incremental improvements on current systems, distribution and sales channels and business models. These service providers would evolve into global processing factories with customized front-ends.

In **Next Frontier**, FS is a global market but innovation is driven mainly by new entrants and specialized players. As governments pursue deregulation and take a “laissez-faire” approach to new business models, the financial services sector operates as a modular ecosystem of highly specialized providers.

**Innovation Islands** differs fundamentally in that local and regional FS markets diverge as geopolitical tensions and instability stall globalization. In some countries, financial services play an important role in the development policies of governments. Innovation allows these players to “leapfrog” ahead of those in other countries which have either remained on a “business as usual” track or even regressed “back to the past”.

These basic storylines were further developed by the project team and supported by additional analysis and data. Boxes on selected topics have been included within the scenarios, which are presented in creative formats to further illuminate some of the key issues that will shape the future of financial services.

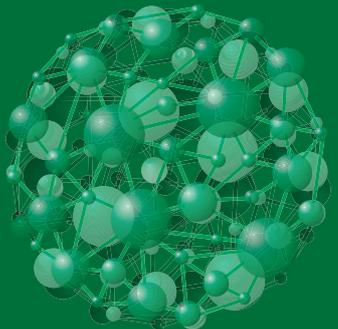
## Global Ivy League



**Global Ivy League** describes a highly concentrated financial services sector dominated by a small number of large, global players. Governments support globalization but take a very conservative approach to customer protection and regulation of the sector. At the same time, declining trust in digital media means customers favour the solidity of traditional financial service providers. In this environment, a small number of financial services institutions evolve into global powerhouses.

This scenario is written as a business school case study providing historical analysis of the developments leading to a Global Ivy League.

## Next Frontier



**Next Frontier** describes a world in which governments pursue deregulation and, as the title reflects, technology enables a great variety of new business models to emerge. The result is a financial services industry as an ecosystem of highly specialized providers, each focusing on creating a competitive advantage over incumbents. There are many new players, including telecommunications companies, peer-to-peer financial services providers, processing providers, retailers and Internet companies.

This scenario is written as a series of blog entries in 2021 in which an expert on financial services reflects on how technology has revolutionized the sector since 2007.

## Innovation Islands



**Innovation Islands** describes a world in which globalization stalls due to geopolitical tensions and global instability. Government policies toward the financial services sector differ widely among countries. Three trends become apparent:

- “Leapfrogging”: in large emerging economies such as China and India, government regulation and investment in infrastructure fosters the local financial service industry, expanding access to the poor and leading to new business models that “leapfrog” over developed markets in areas such as mobile banking and flexible, low-cost operating models.
- “Business as usual”: in other mainly developed economies such as the US or European countries where innovation neither accelerates nor decelerates. There is only limited change to business models.
- “Back to the past”: in the remaining countries and regions, mainly in developing economies. Governments increase control over the financial services sector but do not foster local innovation; as a result, there is little progress and sometimes even regression in the efficiency and quality of FS.

This scenario is written as a series of speeches given at the Indian Institute of Technology on the occasion of the 10<sup>th</sup> Annual Financial Services Innovation Awards ceremony.

**2007-2010:** The attractions of being part of the global economy encourage countries to become increasingly open and to comply with international regulations. Growing competition and the rising costs of regulatory compliance begin to put pressure on smaller banks, leading to a spate of national consolidations. This, in turn, supports the globalization objectives of the large banks and increases their influence. Established brands also benefit from the high incidence of fraud and data security problems that increases customer inertia and makes them wary of new solutions and players. Regulatory measures to protect the customer from increasing security threats create burden for all financial services players. This poses a significant challenge to small and new players' business models.

**2011-2015:** Powered by the expanding middle classes in emerging markets, and by continued cooperation on world trade, the global economy continues to grow strongly. Large international banks feel the threat from agile new market entrants and realize the disruptive power of technology and innovation.

They react with a three-pronged strategy:

- slow down their opponent;
- replicate the best ideas of their opponent;
- failing the first two, acquire their opponent.

At the same time, they continue to transform their operations to increase efficiency and evolve into global processing factories with customized front-ends.

**2016-2020:** Mergers and acquisitions in the financial sector create an environment where a handful of global bank brands are present in almost every national market, either alone or in partnership with national champions. Global financial service providers concentrate on integrating products and adopting the best practices of new market entrants, and become gigantic global financial powerhouses.

**2007-2010:** Social and technological changes make the true power of social networks apparent, and peer-to-peer ratings start to replace brands. Forward-looking governments encourage openness and market competition. Consumers develop trust in digital security. The emerging tech-savvy generation demands choice and a high degree of personalization and customization of financial products and services. Innovative technologies enable the emergence of modular operating models.

**2011-2015:** Common standards for technology become the norm, and the flow of financial transactions among consumers, retailers and banks becomes frictionless with increased global regulatory collaboration and alignment. Advances in identification, authentication, credit rating and security erode the position of traditional banks. Peer-to-peer lending becomes increasingly popular as a result.

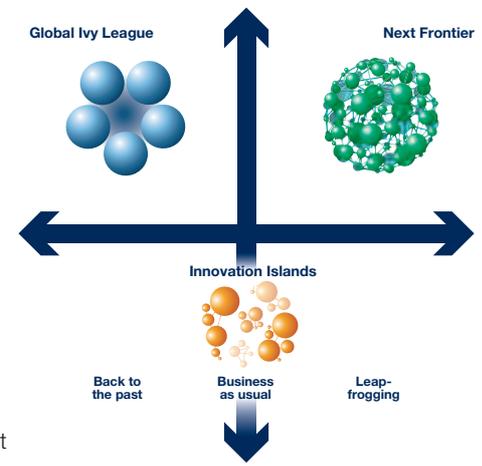
**2016-2020:** High levels of trust develop among individuals and communities across countries and cultures. Governments maintain an open attitude to new business models and support the industry's self-regulation efforts. Consumers are empowered by "Intelligent Agent" software that helps them identify products and services from a great variety of providers.

**2007-2010:** High growth in India and China contributes to protectionist behaviour in Western countries by exacerbating concerns about unemployment in Europe and budget and trade deficits in the US. In response, protectionist barriers also rise in India and China. Governments in some emerging markets reintroduce capital controls and restrictive local ownership rules. Global banks find it increasingly costly to expand into new markets.

**2011-2015:** Amid global political turbulence, the business environment becomes more challenging. Three diverging trends emerge in financial services:

- Governments in large emerging economies, such as China and India, limit foreign competition and encourage new local players, such as telecommunications companies, to compete in financial services. They also promote digital inclusiveness and development of information and communications technology infrastructure. This leads to fundamental innovations in business models.
- Global players based in Europe and the United States focus on their core businesses in home markets. This intensifies local competition and leads to innovations in products, services and distribution and sales channels.
- Innovation slows elsewhere due to restrictive and protectionist policies.

**2016-2020:** Financial services companies in "Leapfrogging" countries such as India and China develop into powerful innovative players. Financial services markets tentatively start to open again as China and India look to export innovative solutions to the rest of the world. There is hope that nations will reopen their markets and breathe new life into the ideals of globalization.



### Overview of the three scenarios

This table provides an overview of some of the most important aspects and development of the scenarios, with further analysis provided in section 6.

	Global Ivy League	Next Frontier	Innovation Islands
<b>Macroeconomy and geopolitics</b>	<ul style="list-style-type: none"> <li>• <b>Stable</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Stable</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Unstable</b> due to geopolitical tensions</li> </ul>
<b>Governments</b>	<ul style="list-style-type: none"> <li>• <b>Favour globalization.</b> Open attitude towards opening of markets</li> <li>• Further international regulatory harmonization</li> <li>• <b>Conservative approach</b> to new business models and new entrants</li> <li>• Governments <b>outsource pension management</b> and some <b>healthcare management services</b> to the large global banks</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Favour globalization.</b> Open attitude towards opening of markets</li> <li>• Further international regulatory harmonization</li> <li>• <b>Open and progressive approach</b> to new business models and new entrants</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Strong reservations about further globalization</b> of financial services, as governments want to control economic sovereignty</li> <li>• Governments adopt <b>protectionist approaches</b> to financial services</li> <li>• In "leapfrogging" countries, <b>governments nurture FS</b> by strongly encouraging new local players and innovative business models through progressive regulation and investments in technological infrastructure</li> </ul>
<b>Customers and society</b>	<ul style="list-style-type: none"> <li>• Multinationals continue to expand their global reach and demand global coverage of financial services</li> <li>• Consumers especially <b>trust the traditional, larger financial institutions</b></li> <li>• Consumers are <b>sceptical about digital security</b>, and private information is shared reluctantly</li> <li>• <b>Digital divide decreases</b> across geographical boundaries</li> <li>• <b>Access</b> for the poor and the "un-banked" <b>improves only slightly</b></li> <li>• Customers favour <b>simplicity and cost effectiveness</b> in their FS transactions.</li> <li>• Increased focus on <b>face-to-face</b> transactions</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Global corporate</b> customers have increasing demands that are <b>well served</b> by an innovative FS industry</li> <li>• Consumers demonstrate a <b>high level of trust in digital security</b> and are open to new digital solutions and innovative players</li> <li>• <b>Consumers are empowered by technology</b> and seek continued improvement in quality of offerings</li> <li>• Customers engage more freely in <b>peer-to-peer transactions</b> looking for ways to cut out middle-men</li> <li>• <b>Digital divide decreases</b> both across geographical boundaries and within societies</li> <li>• <b>Access</b> for the "un-banked" <b>improves the most</b></li> </ul>	<ul style="list-style-type: none"> <li>• Large corporations <b>refocus</b> on regional and <b>local markets</b></li> <li>• Consumers trust and favour <b>local and regional brands and solutions</b> which offer strong cultural affinity</li> <li>• <b>Quality of service differs widely</b> among countries</li> <li>• Inequality and the <b>digital divide increase</b> across geographical boundaries but close within leapfrogging countries</li> <li>• Significant <b>improvement in access</b> to financial services in "leapfrogging" countries</li> </ul>
<b>Competitive environment in Financial Services</b>	<ul style="list-style-type: none"> <li>• Large incumbent financial institutions <b>want to grow internationally</b></li> <li>• <b>Mergers and acquisitions increase</b> around the globe, initiated by western but also emerging economy players</li> <li>• Strong industry <b>consolidation</b>: small number of global FS players</li> <li>• Successful <b>new entrants</b> are seen as a <b>threat</b> and are aggressively acquired by incumbents</li> <li>• Banks compete to gain "greater share of the <b>customer's wallet</b>", bundling services and products in customized packages</li> <li>• Banks compete most fiercely for the <b>middle income customers</b> in developed markets as well as in India and China</li> </ul>	<ul style="list-style-type: none"> <li>• Strong growth of <b>specialized new entrants</b> like peer-to-peer FS providers, telecommunications companies, retailers and Internet players</li> <li>• Dominant FS players from emerging countries – due to limited legacy, innovative solutions and lower labour costs – increasingly <b>challenge incumbents</b> in their traditional markets</li> <li>• Incumbent financial institutions take a <b>balanced approach</b> towards <b>competition and cooperation</b> with new entrants and specialized providers</li> </ul>	<ul style="list-style-type: none"> <li>• International competition decreases as <b>governments</b> become more <b>protectionist</b></li> <li>• <b>Competitive environments differ</b> among countries:                             <ul style="list-style-type: none"> <li>– "Leapfrogging": high competition from new players</li> <li>– "Business as usual": high competition among local FS incumbents as well as some new players</li> <li>– "Back to the past": low competition in general</li> </ul> </li> </ul>
<b>Key operating model(s) in Financial Services</b>	<ul style="list-style-type: none"> <li>• <b>Global "industrialized" financial services providers</b>, i.e. global FS players, have created global processing factories</li> <li>• <b>Outsourcing of support functions</b>, offshoring of core functions to low-cost countries</li> <li>• Significant focus on creating <b>optimal face-to-face</b> bank branch experience</li> </ul>	<ul style="list-style-type: none"> <li>• Widespread <b>disintegration of the value chain</b>: large number of specialized players</li> <li>• <b>Modular, networked</b> operating models</li> <li>• A <b>large variety of specialized players</b> emerge. For example: m-banking, peer-to-peer e-platforms, last-mile distributors, white-label manufacturers.</li> </ul>	<ul style="list-style-type: none"> <li>• Models differ across countries and regions</li> <li>• In "leapfrogging" countries a <b>large variety of specialized players</b> emerge. For example: m-banking, peer-to-peer e-platforms, last-mile distributors, white-label manufacturers</li> <li>• In "Back to the past" countries, vertically organized "silo" operations are predominant</li> </ul>
<b>Type and degree of innovation in Financial Services</b>	<ul style="list-style-type: none"> <li>• Mainly <b>incremental innovations</b> – enhancements of products, services, channels and operations</li> <li>• Limited innovations in business models</li> </ul>	<ul style="list-style-type: none"> <li>• High degree of <b>innovation in business models</b> – driven mainly by new entrants, e.g., m-payments providers, peer-to-peer FS providers</li> </ul>	<ul style="list-style-type: none"> <li>• The nature and degree of <b>innovation varies by region</b> and country depending on whether it follows a "Leapfrogging", "Business as usual", or "Back to the past" trend</li> </ul>

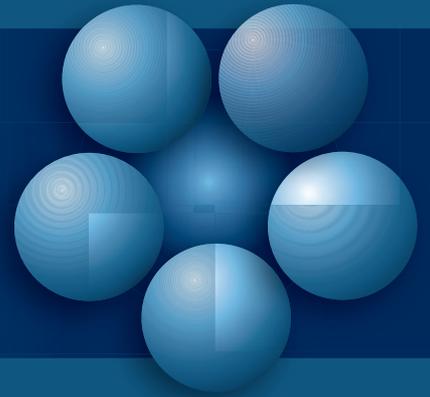
### Exploring the future of financial services from an innovation perspective

We now invite you to turn the pages, travel through time, and see for yourself how technology and innovation may change the financial services industry in the next 14 years.

Section

3

# Global Ivy League





# Scenario



Richforth Business School

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Section

3

## Global Ivy League<sup>1</sup> 2007-2020

***This paper presents an analysis of the Global Ivy League of banks. Although the term “Global Ivy League” was not universally recognized until slightly later, the authors take 2007 as their starting point, as this was when mergers, consolidation and expansion began to spread virulently across the banking value chain. The authors demonstrate that, despite the superior agility of new players in harnessing technological innovation, incumbent banks proved able to entrench themselves through a combination of customer inertia and economies of scale.***

### Introduction: Meeting the Challenges of 2007

Back in 2007, large traditional banks were expanding rapidly across the world. But they faced challenges in keeping up the pace of growth and expansion:

- While the Internet and mobile devices offered potential for growth, security breaches and fraud such as identity theft threatened to seriously undermine consumer confidence in new digital channels;
- Access to the emerging markets of the BRIC countries (Brazil, Russia, India and China) was uncertain as governments in those countries intended to keep tight control of the financial services sector;
- The costs of regulatory compliance were increasing, which made it more difficult to achieve improvements in cost efficiency;
- Large corporations were increasingly global and required financial services on a global basis. Mergers and acquisitions needed to be automated and industrialized to accelerate the process of consolidation. The number of internationally mobile individuals was also rising, but it was unclear how best to capture them and turn them into a profitable segment;
- Large and complex systems and vertically organized “silo” departments imposed a drag on innovation.

History has shown that established banks were able to overcome these challenges and transform them into powerful opportunities:

- Digital security concerns strengthened the power of trusted brand names and discouraged customers from moving to new players with less established track records. With their powerful technology base, security expertise, and ability to manage risks through insurance and offsetting, global banks could offer customers more trustworthy guarantees;
- Although they wanted to retain control, governments in emerging markets also wanted to learn from established Western financial institutions, in particular about governance and management;
- Financial institutions needed deep pockets and large-enough scale to be able to spread fixed costs widely and thus afford the extra expenses associated with regulatory compliance. For new

<sup>1</sup> This case study was prepared by Andreas Bruckner in association with Elizabeth Garcia. Andreas Bruckner is Professor of Economic Strategy at Richforth Business School and Elizabeth Garcia is a visiting fellow and Director of Technology at AmCiti Bank.



players, lack of scale became a strong barrier to entry.

- The stable and fast-growing world economy increased rewards for institutions with cross-country operations, which in turn enabled banks to meet the needs of internationally mobile customers. Globalization led to economies of scale as customer needs around the world followed similar patterns and business models converged. Large banks could reduce costs by moving some operations offshore.
- The financial strength of large banks gave them sizeable budgets for technology innovation. With enhanced technology, and fixed costs spread over a large resource base, efficient segmentation helped them provide targeted products and services at a lower cost than their smaller competitors.

By dividing the last 14 years into three distinct periods, we can take a closer look at the challenges banks faced and paint a clearer picture of how events unfolded.

### **2007-2010: When Size Really Mattered**

With the benefit of hindsight, we can see that a clear pattern emerged during the period 2007-2010. The attractions of being a part of the global economy encouraged countries to become increasingly open and comply with international regulations. This, in turn, supported the globalization initiatives of large banks and increased their influence.

*“At the time, despite our size and success in the global market, we saw both opportunities and threats in the geopolitical environment. It was critical for us to keep the regulatory harmonization process going forward.”*

**Executive Vice President, Uniglobobank**

23 February 2008

At the start of this period, even though the large banks faced increasingly complex challenges in terms of regulations and systems, the profitability of the global banking system was reaching a staggering 20% threshold.

Despite the continuing threat of terrorism and a still-unstable Iraq, a period of relative geopolitical stability was signalled when Iran and North Korea each agreed to negotiate nuclear containment and disarmament. Interest rates and inflation remained low, and the global economy was steadily growing.

Initially, most large banks were restricted to national or regional markets. But they perceived opportunities in an environment favourable to open markets and pushed to lift barriers. As table 3.1 shows, India progressively removed foreign ownership and trade barriers, driven by their accession to the World Trade Organization (WTO) and the need to compete for foreign direct investment in



Enacted Reforms	Prior to March 2005	2005-2009	2009 Thereafter
<b>Structure of foreign bank presence in India</b>	Branches only	Branches or wholly-owned subsidiaries	Equal treatment under the law including for initial public offerings (IPOs), subject to the requirement that 26% of paid-in capital be held by resident Indians
<b>Aggregate foreign direct investment limit in private banks</b>	49%	74% for banks identified as distressed	74%
<b>Foreign voting rights limit</b>	10%	Amendments on voting rights to reflect ownership level in response to demands by banks with global reach	
<b>Annual limit on new branches</b>	12	> 12 subject to RBI approval	

This period brought significant growth in the numbers of high net worth individuals. Particularly in the emerging markets, they tended to be internationally mobile and open to financial opportunities anywhere. The lowering of trade barriers also created greater demand for integrated cross-border financial services. Through cross-regional acquisition, large banks were quick to increase their presence in new market segments.

Economic stability provided large banks with the opportunity to help create and strengthen a global regulatory regime. This proved costly at first but worked in their interest in the end. Increasingly complex regulatory requirements demanded additional investments and significantly raised operating costs. In the United Kingdom in 2008, the incremental cost of regulatory compliance as a percentage of total operating costs increased 3 percentage points from 2006. Smaller national banks were unable to bear the cost of maintaining large and efficient back-office operations and began to share systems to remain competitive. In 2008 a spate of national consolidations, in particular in Europe, took place. The introduction of the Single Euro Payments Area (SEPA) played an important role in overcoming fragmented systems in euro payments<sup>2</sup>. As a result of harmonization, the advantages of economies of scale grew in the payment arena.



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## Frequently Asked Questions

Find the answers to frequently asked questions about the Federal Reserve Bank of New York, the Federal Reserve System, economic indicators and statistics, and other related topics.

### Single Payment Standard Development

**Question: Why is establishing payment standards so complicated?**

International payment has never been simple. Any solution requires an industry-wide agreement and involves extensive changes to institutions' core operations and technologies. Legacy systems have become intertwined into a complex web through mergers and acquisitions which further complicated any changes.

**Internal challenges for banks for common payment standards**

Common Issues

- Payment services not fully automated or open for Straight Through Processes (STP)
- Vertically organized "siloe" legacy system
- Need for product-oriented business and product based incentive schemes

**Question: Have there been any initiatives for standardization so far?**

Standardization attempts have included payments made by International Bank Account Number (IBAN) and Bank Identification Code (BIC), and the SwiftNet infrastructure. Established by the International Standards Team Harmonization (ISTH), the first stage of the STP payment initiative standardized corporate-to-bank payment and status messages. The second stage, to standardize the other leg of flow from bank-to-corporate messaging, is almost complete. Once completed, it will enable the delivery of full remittance information across industries.

**Question: Are there examples of single payment systems?**

Yes. Some initiatives launched by non-bank players have been incorporated by banks. Responding to dissatisfaction with financial sector costs and demand to enhance EU economic integration, some regional initiatives succeeded in reducing costs, increasing transparency and enhancing customer service levels:

- Single Euro Payment Area (SEPA)** is a payment standard and infrastructure that aims for all electronic payments within the Euro zone to be treated "domestic". This is to reduce the difference between non-domestic and domestic transaction cost to make money movement easier and cheaper within the Euro zone. SEPA will be fully operational by 2010 and should further Europe-wide competition; banks will need to completely automate their manual processes and refine their information technology systems.
- Faster Payments UK** shortened clearing time to less than a day with the Open Payments Framework (OPF), a library of component building blocks that supports the full payment lifecycle and is built entirely with Service Oriented Architecture.



After the wave of national consolidations, further competitive pressure led to more cross-border acquisitions. This exacerbated scale disadvantages of smaller banks. International expansion was further reinforced by business demands from similarly expanding corporations that wanted consistent and reliable service everywhere. Regulators worried that consolidation and concentration would limit market competition. These concerns were alleviated by the efficiency and security gains that these consolidations were expected to provide.

Numerous stock exchanges also merged as part of a trend fuelled by compliance with new regulations such as the Markets in Financial Instruments Directive (MiFID) in Europe. US exchanges merged with European counterparts partly to expand the area of compliance for Regulation National Market System (RegNMS) and Sarbanes-Oxley and include those companies that were listed on European exchanges in an attempt to escape the strict US compliance rules.

Technology facilitated organizational change by increasing levels of automation and reducing dependence on expensive skilled staff. Large banks expanded their share by setting up global processing factories in low-cost countries such as India and China, using improved and secure global telecommunication networks. They maximized their usage of existing technologies such as video and Voice over Internet Protocol (VoIP) to bring greater cost efficiency in global communications. Additionally, they pushed for greater developments in grid computing, and virtualization technologies to mobilize unused computing capacity. Relationships with technology firms became more unified and global, as technology purchasing became centralized to increase procurement efficiency. The importance of unified cross-regional contingency plans and robust disaster recovery schemes also increased, leading to the growth of a number of global “support services” providers.

Especially with the difficulties of integrating the systems of newly acquired banks, Service Oriented Architecture (SOA)<sup>3</sup> emerged as the dominant enterprise architecture technology for global banks. Banks used SOA to reconfigure legacy information technology (IT) architecture, to improve flexibility and reduce cost base.

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<sup>3</sup> See box page 17: What is SOA?


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# BLOGPOSTS



## What is SOA ?”

Posted by [Uma Brown](#), CIO TechyBank, at 11.57 UTC, 10 December 2009

Most business people, and even some technology specialists, find Service Oriented Architecture (SOA) rather hard to grasp. SOA is not a technology product that can be sold out of a box. Rather, it's a methodology, a process, a way of thinking. It enables existing technologies to be quickly configured and reconfigured to meet specified goals. It can change as business needs change, and is workable and cost-effective.

Let me give you an analogy. Suppose your goal is to get transportation from your home in Cleveland, Ohio to a certain destination, let's say a hotel in New York. The kind of software architecture traditionally used in banking would be like having a train line running direct from your home to that hotel, whereas SOA would allow you to use a combination of transports, like driving to the airport, flying to John F. Kennedy International Airport and then taking the subway. In other words, the traditional architecture is fine as long as you only want to go to the hotel in New York, but SOA makes your life a lot easier if your destination changes.

A car, an airplane and a subway train are units of transportation that can come together temporarily to achieve a specified journey. Similarly, SOA is like a wrapper around units of banking software applications that come together temporarily to achieve goals.

**DECEMBER 2009** ◀ ▶

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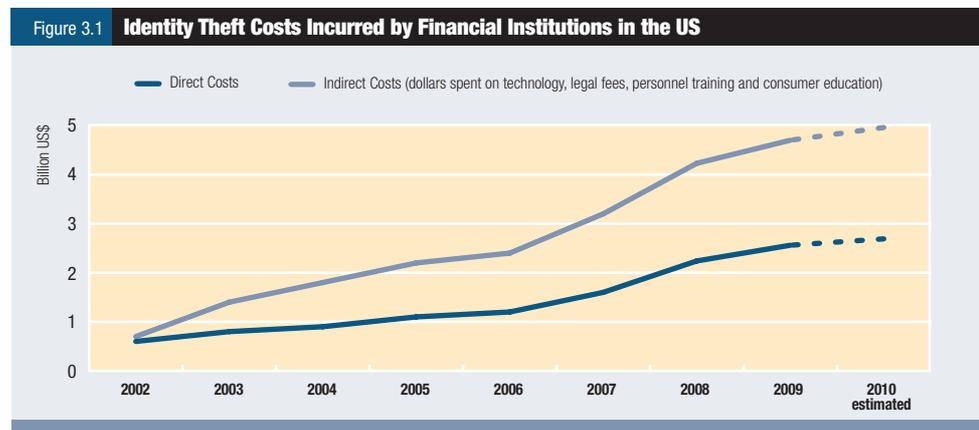
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Towards the end of the decade, technology advances, innovation and increasing access to broadband Internet were enabling a new generation of players from the BRICs countries (Brazil, Russia, India and China); they started to threaten the position of the Western financial institutions. For instance, InDiCi, the second largest Indian bank at the time, expanded into Europe and the US using low-cost, technology-led business models coupled with customer-centric, targeted products. But the competitive advantage of banks based in low-cost countries gradually eroded as the labour cost in those countries started to increase.

Peer-to-peer lending platforms such as LendDirect were growing impressively, despite continuing fraud and identity theft on the Internet<sup>4</sup> as depicted in figure 3.1.

Large banks responded with marketing campaigns that highlighted their counter-fraud efforts supported by accumulated know-how and abundant resources; they were in a position to offer higher degrees of security in the digital environment, and increasing numbers of clients proved willing to pay a premium for it.



But emerging market players and peer-to-peer platforms were not the only threats. Around the world, telecommunications companies were moving into payments and other core retail financial services, driving margins into the ground. Aggressive e-retail brokers and “monoliners” – providers of single services such as Mortgage Direct – started to eat into the valuable product segments of credit and investment management.

**TIME**  
INTERNATIONAL

Letter to the editor

25 March, 2010

## “Security breach: A Conspiracy Theory?”

by Ivan Ivanovich, a concerned user

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The 21st century norm is 24/7 connectivity with more potent computers and higher bandwidth. That means more users with higher stakes and plenty to lose should our connectivity and security go seriously askew. What if the Internet experiences a “9/11 moment”, with havoc created by some kind of infection of the Web?

This isn't only about spam. There could be nefarious alterations of vital records at medical or social security offices or passport-issuing departments. We could see cyber-terrorists robbing people's identities to extremes imagined in the movie *The Net* and ER-style television series about rescuing data rather than people.



### 2011-2015: The Empire Re-invents Itself

Powered by the expanding middle classes in emerging markets and continued international cooperation to promote trade, the global economy continued to grow strongly between 2011 and 2015. This period also saw some reversal of established consumption and saving patterns – while the population of the developed West was saving more than ever, in part as a response to the turn-of-the-century pensions crisis, the young and newly financially confident populations of India and China were discovering credit. This convergence of customer needs across countries played into the hands of institutions operating in global markets. By making corporate governance a priority, banks were increasingly able to harmonize their operating models around the world, further leveraging their economies of scale.

In this period, large international banks were, however, experiencing increasing competitive pressure from agile new players with systems based upon newer, more flexible and cheaper technologies. When global banks entered a new country, they often confronted technologically advanced local players; global banks were themselves new entrants to the local market. A loose grouping of large banks emerged to discuss how to steer the agenda of the financial services industry and ways of self-regulating that could work to their advantage.

Looking back, we can identify a three-pronged strategy that banks adopted to counter the threat from new entrants: slow down the opponent; replicate the best ideas of the opponent; and, failing that, acquire the opponent.

*“The first of the newly established Ivy League Annual Meetings, which took place in Cambridge in early 2011, provided a forum for the largest global banks to discuss standardization and technology issues. The general mood was that something new was going on. We figured that our organizations were moving too slowly given the speed of change. We’d seen what had happened to our friends in the media and music industries. We were determined not to end up in the same place by constantly failing to capture business opportunities.”*

**Chuck Rogers, PanUniBank**

12 September 2011

Incumbent banks joined consumer protection advocates in successfully lobbying for regulatory modifications. These made LendDirect and other peer-to-peer lending platforms abide by the same underwriting laws that applied to traditional lenders such as GiltTech and Loan-U-Kwik. This blunted the competitive edge of the peer-to-peer networks and slowed their growth.



To match the flexibility and cost-efficiency of new players, large banks had to be able to replicate these more innovative operating models within their own organizations. Banks that had invested heavily in Service Oriented Architecture (SOA) began to feel the benefits in faster and smarter data processing and retrieval. These advances in technology helped them move beyond their vertically-organized "siloed" structures, resulting in greater agility and helping them to offer new differentiated products at lower cost.

SOA enabled smaller firms to interact more seamlessly with the larger banks, and thereby helped these banks to innovate. In addition, SOA technology simplified the outsourcing of support functions and the integration of new acquisitions. DutchBank's acquisition and successful integration of LendDirect was the prime example. Similarly, banks were able to harness emerging solutions like mobile banking and Mobile Wallet as extensions of traditional banking channels. After payments, other services such as reconciliation and clearing became commoditized. These in-bank services were therefore streamlined and spun-off. Meanwhile, high value-added services such as pricing, underwriting and mergers-and-acquisitions valuations were kept in-house.

With innovations in datamining, tracking and location technologies, banks became better at learning about the needs of their customers; indeed, the building of detailed individual customer profiles reduced the importance of expert advisors, leading to further cost reductions. Knowledge gleaned from these large customer databases became an important competitive advantage.

Better customer information led to some significant innovations in bank branch design and purpose<sup>5</sup>. Sensor technologies to track customer, footfall analysis, realtime customer information and enhanced information delivery tools began to merge properly into a unified toolkit to provide fast and highly customized banking experiences. The bank branch, in this period, established itself as the ultimate safe haven of banking: trust in the bank and face-to-face contact combined with accurate customer profiling.

Through this, Global Ivy League branches began to make significant advances in total customer ownership, leveraging their ability to deliver convincing, tailor-made, customer lifestyle banking packages, unifying multiple products and services into one relationship.

*"We thought our low-cost modern technology base would allow us to take on the global banks. We underestimated the depth of their strength over the long term and the consumer backlash from rising Internet fraud."*

**E. K. Nayanar, CEO of InternetBank,  
the online financial service provider**

24 January 2013

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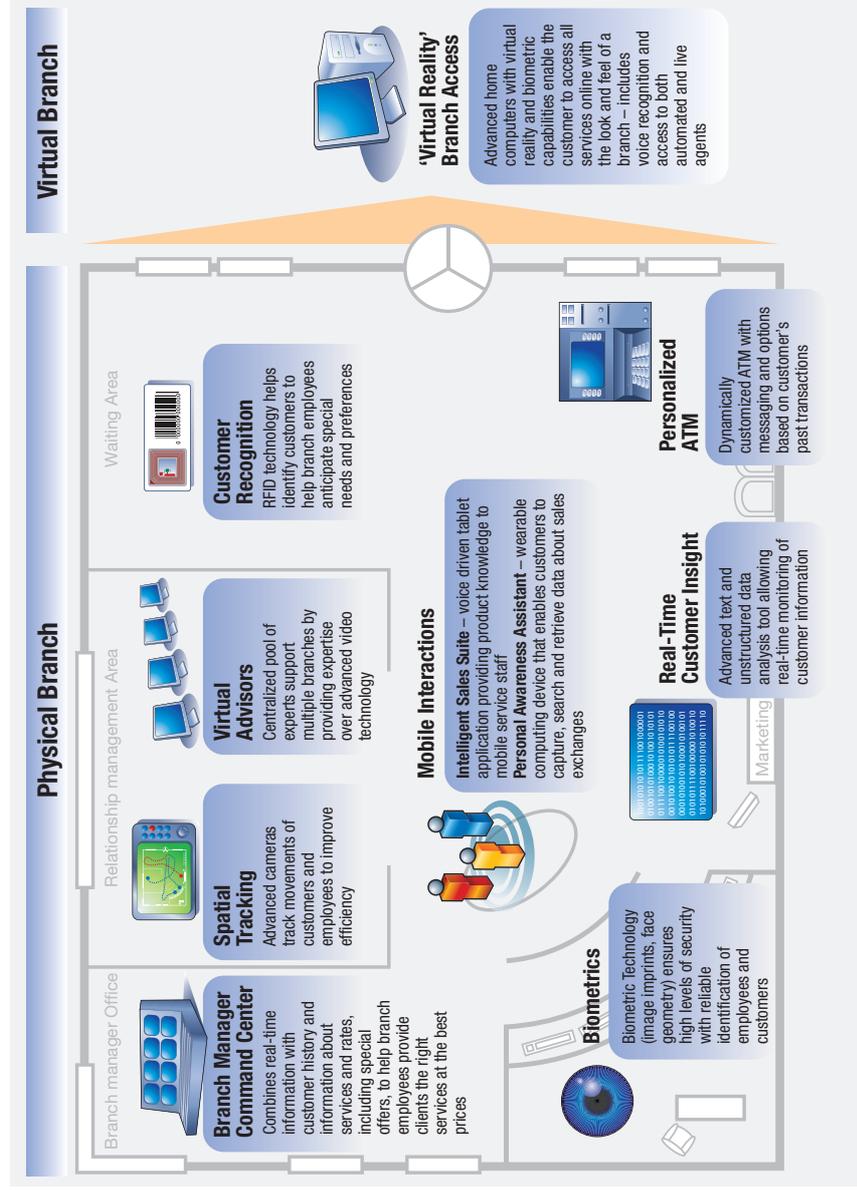
<sup>5</sup> See box page 22: Branch of the Future



## 1.0 FINANCIAL SERVICES CONSULTANT REPORT - MARCH 2012

### “THE BRANCH OF THE FUTURE”

“Branch of the future” is a compound of multiple technologies designed to improve customer access to products and services. It differs from earlier bank branches by offering an integrated suite of technology solutions to help ensure customer satisfaction, boost sales and guarantee top-notch service. Elements that constitute the branch of the future emerged as early as 2007 but full-fledged services started to be provided on a large scale recently.





As E. K. Nayanar notes, high Internet fraud also helped big banks fight off competition from new players. The resulting climate of unease and fear added to the inertia of customers, who tended to keep their financial business with trusted brands that offered the largest liability coverage. This favoured traditional distribution and sales channels and incumbent banks and hindered the uptake of new channels and players.

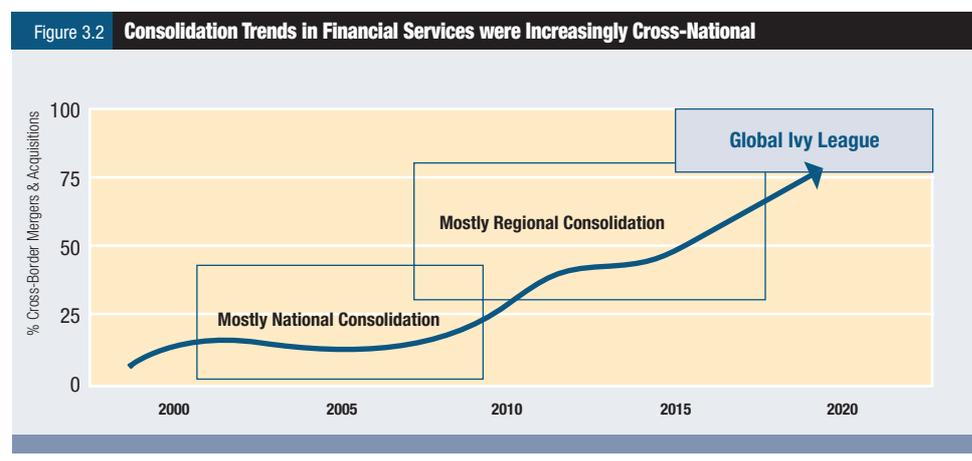
Global privacy regulations were harmonized after a push by the Organization for Economic Cooperation and Development (OECD) in 2013. This promoted the development of global technology standards that allowed controlled sharing of customer data across federated networks and the development of trusted biometric identity verification services. Pattern detection technologies, harnessing qualitative “soft” information and preference trends, improved the ability of global banks to fight online identity fraud – identities fitting suspicious patterns could be asked to provide further information. Large banks provided secure authentication and biometric verification services to governments as well as smaller players<sup>6</sup>.

*“People were afraid to open their e-wallets for fear of being digitally mugged. The Federated Identity Networks were the place that offered peace of mind. If anything did happen, the member banks covered your losses.”*

**Ex-Security Chief, Barbican Investments**

1 August 2014

Fuelled by technology-driven economies of scale, consolidation accelerated as large banks looked ever further beyond their home regions and forged highly visible equity partnerships and alliances. Figure 3.2 illustrates the consolidation trend which started by being mostly national and regional, and expanded to the world of Global Ivy League banks over two decades. A bank’s geographical origin became less important as the Global Ivy League of mega-banks emerged to provide a full range of financial services to individuals and corporations around the globe.



<sup>6</sup> See box page 24: Federated Identity Network



# WALL STREET JOURNAL

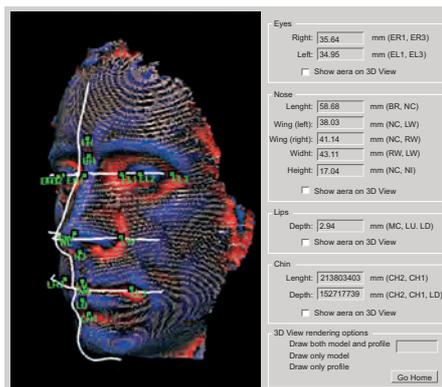
18 March 2014

## Banco Monetario Unveils Federated Identity Network

A consortium of banks and online service providers headed by Banco Monetario has unveiled an integrated cross-company, cross-industry identity authentication network. Members of the Federated Identity Network (FIN) will remain independent but will be able to exchange personal customer data throughout their proprietary systems. Customers themselves can control exactly how much of their personal data will be shared.

Impetus for the project came from rising financial losses due to identity fraud. Synthetic identity fraud, in which an artificial identity is created, became almost 10 times as common as theft of real identities. In FIN, identity authentication is based on three-dimensional facial recognition (see picture below) for transactions in person. If a problem is identified, security staff is alerted in real time. For online transactions, hand geometry recognition authenticates the identity of customers who then enter a virtual space where they can access Banco Monetario's virtual banking advisers and personalized automated service to make purchases from FIN members.

### 3D Face Recognition



The FIN service differentiates Banco Monetario from its competitors and opens up new revenue streams. Bill Banken, VP Business Development at Banco Monetario, said: "Banks have a long history of looking after our customers' assets – including their identities. Our customers don't mind us sharing their data with partners as long as this improves products and services."



*“Our vision was simple but clear. Only the largest institutions would dictate the future of finance, and we were determined to be in the top tier. We got there by buying up anything that gave us a foothold in the BRICs market, and grew them like crazy – while picking off anyone who might prove a longer term challenge and incorporating their best ideas into our own portfolio.”*

**Chairman, Mega-Corp Financials**

26 September 2014

#### Newspaper Headline Excerpts

##### **InDiCi merges with AmeriCiti in \$640B India-US banking deal**

31 October 2014

##### *EuroBank targets Chinese market: UK-based giant acquires 90% stake in Sino Trust Bank*

29 April 2015

##### **Banco America Latina board accepts DutchBank takeover offer**

8 July 2015

Global banks became more responsive to the demands of their highly mobile global customers for tailored global financial services. Wealth management institutions met the demand for higher returns from the growing population of high net worth individuals in India and China. For the first time, bank accounts and pension schemes became transferable across both countries and financial institutions, and customers could still maintain the original bank account number.

Beyond saturated national and regional arenas, financial service liberalization allowed room for further merger and acquisitions in a global context. Further cross-border mergers also took place between stock exchanges in this period, as economies of scale and global reach determined survival. In the meanwhile, GlobeEx, a global exchange founded by the top five global banks, introduced a new dimension to the market. Leveraging its varied global market portfolios, GlobeEx became the largest multilateral trading platform.

GlobeEx's reach was limited, however, to the developed Western markets. India and the Asia-Pacific countries decided to safeguard national interests. China and Japan agreed to work together for the protection and safe-keeping of their financial systems and created a merged exchange called Pan-Asiex to trade across major Asian economies.

Meanwhile, the Indian government introduced a rule whereby only firms that had operating licenses in India could trade shares on IndiEx, India's leading exchange at the time. Such attempts to defend national sovereignty and limit the reach of GlobeEx backfired. Scale and liquidity were key, and without the support of global super players, hard to attain. The result was the collapse of IndiEx, sold for a symbolic one Indian rupee to Pan-Asiex at the end of 2015.



### 2016–2020: A Small World

In this period, the Global Ivy League banks transformed themselves into the massive computing powerhouses we know today. Their vast technological resources allowed them to leverage grid and quantum computing to maximize the utilization of their own global technological infrastructure. By 2016 mergers and acquisitions in the financial sector were creating an environment where a handful of global bank brands were present in almost every national market, either alone or in partnership with national champions. With time, this market dominance only increased, with global financial services providers concentrating on integrating products and adopting the best practices of new market entrants, either by copying their methods or acquiring them. Governments partially or entirely outsourced payment management services, such as taxation, pension and healthcare to Global Ivy League banks.

The emergence of global banks has forced regulators to work together to provide oversight. The UK Financial Services Authorities (FSA) and the US Securities and Exchange Commission (SEC) synchronized their operations. FSA introduced strict regulations regarding use of fast-emerging technologies such as algorithmic trading and intelligent agents, as concerns around market volatility and systemic risk grew. Customers trusted global brands as the best guarantee of safety and reliability.

As the lessons of IndiEx were learned, the few dominant stock exchanges fought for global control of investment markets. Governments in Latin America and elsewhere openly deregulated to encourage acquisition of their exchanges so as to not slow incoming investment and to maintain liquidity. In addition, governments increasingly delegated financial functions to large banks and even started to use them to provide core governmental services such as administering pensions and healthcare benefits.

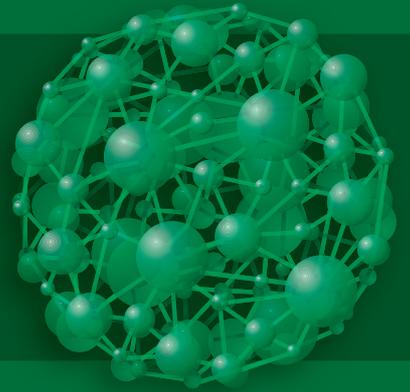
Global Ivy League players have particularly focused on the top and the growing middle class in developed and emerging countries. Poorer segments of the global population have not been especially well served by the Global Ivy League. On the one hand, economies of scale and technology improvements lowered transaction costs and banks had acquired some leading microfinance institutions to expand the range of consumer credit. On the other hand, service improvements were limited to urban areas. More cost-efficient solutions, such as mobile banking, were not aggressively pursued except to serve their more profitable customers. Improving access to financial services for the poor, especially the rural poor, remained largely an aspiration.

### Conclusion

Despite innovation and smooth technical delivery, most new entrants to the financial services market could not compete with the large banks. Large banks with deep pockets were able to embrace and integrate innovations made by new players alongside their own. Strong trusted brands, economies of scale, reliable service and steady innovation, driven by successful acquisition and integration, were the driving forces behind the emergence of the Global Ivy League.

Section

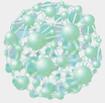
# 4 Next Frontier



## Scenario

## Section

## 4 Next Frontier



## Section 4: Scenario Next Frontier

http://www.thenextfrontier.blog/home/ Today | RSS | RDF | Atom | Other

# THE NEXT FRONTIER

"Technology's power to break new ground"  
by Techtimonious

SEARCH

## Financial services over the last 14 years – crossing the Next Frontier

 **Posted by Techtimonious (moderator), New York, 3 February 2021 06.23**

Hello and welcome back to my series of think-pieces on how technology has revolutionized various industries in the last 14 years. As you know, the aim of this series is to encourage professionals working in those industries to reflect on how they've developed. We now take for granted so many ways of doing things that were considered near-miraculous innovations not long ago. This time I'm looking at the global financial services industry – a sector close to my heart as I have worked in it frequently during my consulting career. As usual, I'll start with a brief overview divided into three periods, and then consider each period in more detail in subsequent posts.

Looking back, we can see that 2007-2010 was a period in which the social and technological foundations were quietly being laid for the rapid changes that followed. Mobile phone and internet penetration rates were massively rising. People were becoming more tech-savvy and demanding more choice and customization. With the rise of social networking and peer-to-peer exchanges, peer reviews were taking over from branding as the main way people judged reputation. This paved the way for the peer-to-peer investment networks that followed. Governments in leading economies stimulated market competition through open standards and modular systems.

**About me**

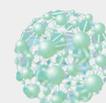
I was born in 1976 in Kuala Lumpur. I studied computer science at MIT, graduating in 1998, and then took an MBA in Accounting at the London School of Economics. Since then my career in management consultancy has covered Europe, the USA and Asia...  
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**February 2021**

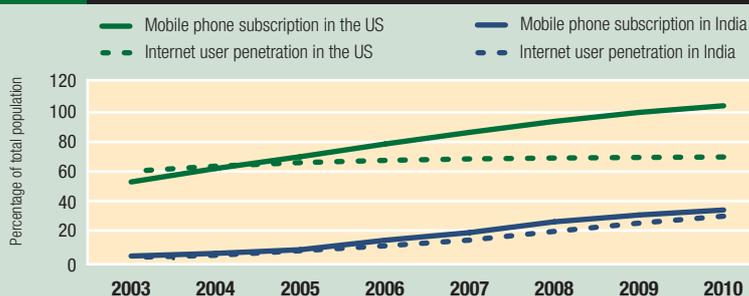
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- [2018](#)



**Figure 4.1 Rising Mobile Phone and Internet Penetration - Examples from US and India**



Between 2011 and 2015, Service Oriented Architectures (SOA) replaced many legacy platforms across the banking sector. This type of systems architecture based on common standards improved communication between applications and made it easy to build and reconfigure systems, bringing an explosion of innovation and change and fierce competition. With an increasingly harmonized regulatory environment, financial transactions were made almost seamlessly. Significant advances were also made in data security, identity authentication – a product of technological advance and global collaboration. As a result individual credit rating, peer-to-peer lending and borrowing took off. Increasingly well-informed customers demanded highly specialized and personalized services. New and agile niche players were typically better positioned to meet their needs than were traditional banks.

In the final period, 2016-2020, we saw another wave of fundamental technological advances push us into the next frontier. A single world market blossomed as individuals and communities have come to trust the multiple ecosystem involved in the process of carrying out long-range and peer-to-peer transactions. Thanks to the Semantic Web and Intelligent Agents, individuals gained access to highly specialized financial modelling that was once only the realm of big corporations and institutional investors. Intelligent Agents became increasingly intuitive for users. Replicating the human thought process, they quickly came to efficiently and resiliently conduct specialized financial tasks that used to be handled by large numbers of people. People, ideas, and – of course – money were flowing freely.

Of course, the journey from 2007 to 2021 was not as smooth as all that. In the next few days I'll look in more detail at each period. In the meantime, take a look at figure 4.2 that nicely summarizes the technologies that shape the financial services industry today – they're familiar to us all, of course, but I wonder what I'd have made

Next >



Figure 4.2

**Major Technology Building Blocks that Shape the Future of Financial Services**

**Intelligent Agents**

- Light-weight, autonomous software programs
- Offer sophisticated, proactive and reactive assistance to owners, supported by the emergence of semantic web
- These programs become trusted agents and owners delegate decision



**Service Oriented Architecture**

- A standardized way to orchestrate existing systems, applications, and capabilities
- Effectively a loose coupling of processing - "wrapper" configured to support the business rather than the other way round
- Processes can be continually developed and optimized in response to business needs

**Modelling & Complex Analytics**

- Models able to interpret qualitative data and learn continuously
- Autonomous models drive business processes by continuously evaluating information and initiating action independently
- Solutions such as probabilistic databases are used to make complex models of patterns in real time, e.g., of consumer behaviours and preferences

**Technology Building Blocks**

**Real-Time Information Management**

- Collective enterprise infrastructure enabled by the use of Service Oriented Architecture
- Real-time capturing, storing, managing and distribution of exponentially growing information
- Much of the information management infrastructure will be outside the enterprise, expanding to involve several

**Semantic Web**

- Framework of standards
- Recognizes data separately from the documents that contain them
- Able to relate data to real world objectives
- Allow data to be easily shared and reused across applications, enterprises, and communities

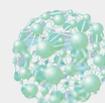
**Grid & Utility Computing**



- Grid and virtual computing tap unused capacity on individual machines and tie them together
- They enable utility computing, which makes computer power available on an on-demand, pay-per-use basis delivered via the web

- Web 2.0** ■ Participative, social, collaborative web
- Partially automated

- Web 1.0** ■ Worldwide information grid
- One way information flow



...

### It's amazing how much hassle we've saved by technology



Posted by Gadgetman, Shanghai,  
4 February 2021 00.12

You're right, Techtimonious, we quickly get used to new technologies. Just yesterday I was buying a new Electrocar for my daughter, and I actually found myself getting annoyed that I still have to haggle with the dealer myself instead of being able to leave that to my Intelligent Agent (IA) like everything else. It's sobering to think back to the olden days, when I'd have personally dealt with all the tedium of phoning around banks and loan companies to compare financial deals and arrange a money transfer. Now I just had to say "execute" to my IA when we agreed to the price, and my daughter can unplug the charger and drive off<sup>1</sup>.

### Are you kidding? There's plenty of hassle in my finances



Posted by Incredulicious, Tokyo,  
5 February 2021 04.17

Wow, you oldies are easily pleased, aren't you? Okay, I suppose your generation might think today's technology is great compared to the abacus or whatever it was you used when you were my age. But for a girl who opened her global stock portfolio at the age of 12, investing brings me nothing but frustration. Like, I've been waiting nearly four whole minutes now to conclude a deal for

#### Note

<sup>1</sup> See box page 32:  
Car Purchase

### 2007-2010 – A silent incubation



Posted by Techtimonious (moderator), New York,  
6 February 2021 23.11

Thanks to Incredulicious for reminding me that not everyone remembers how much we've moved on in the last 14 years. I sometimes forget that today's financial whiz-kids have never even seen a TI-83 calculator. Ah, that makes me slightly nostalgic...

Recall the way it used to be – you did what banks said, or you didn't get your financial services. Just like there was a time when you could only get music if you bought one of those shiny plastic discs – CDs, were they called? Then along came a company called Napster and now we're happily getting music beamed to our IAs from our choice of thousands of specialized music dealers.

It wasn't just in the music industry that people quickly got used to more opportunities, more choice, more flexibility, and more active involvement in what had previously been passively consumed. Television programs actively invited audiences to participate in developing stories which strongly engaged the participants, and Google took over from television as the most powerful media channel. In financial services, too, people increasingly demanded personalized products. We saw a clever convergence of business models with technological advances that lowered the prices and



## Car purchase at a click of the finger

June 2020

**My 18-year-old daughter and I walk into an auto dealership. Although it is not a planned trip, we decide to drop in since my daughter is going away for college and will need a new car. I negotiate a favourable price with the sales person and purchase the vehicle without a call to my bank, registry, or even signing a piece of paper. My daughter happily drives out of the showroom in her new car. How did this happen?**



**1** As soon as I walk into the dealership, a number of Financial Service Providers (FSPs) are made aware that I have entered an environment where they may be able to sell me a product

- My intelligent agent (IA) is responsible for managing my relationships with the outside world and can communicate with any other agent by using a standard Agent Communication Language (ACL).

- Using Global Positioning System (GPS) and a locator service on the Web, my IA determines that I am in a dealership. Once I confirm to my IA that I am serious about buying a car, the agent immediately releases information to my preferred financial providers regarding my potential purchase.

- My agent exchanges information about me and my potential purchase with agents of several FSPs in the Resource Description Framework (RDF) format used by the Semantic Web. It will create a Virtual Organisation (VO) among digital entity stakeholders, including the agent of the dealership and the FSPs that are engaged.

**2** A financial service provider received the alert from my agent and completes a number of processes to determine the incremental value of this loan and the appropriate pricing

- Via the Semantic Web, the FSP's agent purchases external computing power, modelling components, and data for evaluating the situation and making a bid.

- The FSP requires a variety of third-party information from public and private sources. For private information, my IA provides a key to make the information temporarily available to FSP.

- The FSP agent looks "internally" for information about the business value of this potential transaction, including loan balances and defaults, funding alternatives, business strategy, etc.

- Elaborate pricing and decision models are used to evaluate the incremental value of this transaction from profit and risk perspectives. Some components of these models are proprietary and some are brought in from the outside expressly for this situation. These models leverage up-to-the-moment information in the form of semantically annotated metadata (data about data) from a variety of internal and external sources.

- A financial package will be built from a set of components, some of which may be obtained over the Web. The product structure and features will be based on the preferences shared by my agent.

**3** Institutions push their deals to my agent, which makes the decision

- My agent reviews the proffered deals and relays information to me that allow me to make my buying decision. As I select my vehicle, information about my selection is routed to the bidders.

- My agent uses complex modelling and analytics to make the best financing decision, obtaining the needed processing power, data and models from the web. My choices may include: purchasing the vehicle with "cash", using an existing credit line, or obtaining a new loan. The decision incorporates information on interest rate trends and examines "what if" scenarios. For example, if interest rates are expected to decline over the next year, my agent might choose a floating rate loan.

- My agent negotiates on my behalf to set up the best structure, pricing and features with the leading contender. I have much more leverage with my agent than I do on my own, because it can play these firms off against each other in real time. The agent provides the advised optimal solution and I confirm.

**4** I close my deal with the dealership and my daughter drives off with the car

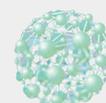
- My agent agrees to terms with one of the FSPs. The selected institution books the loan and funds are transferred to the dealer's account. My agent also transfers the down-payment from my bank account. I do not review the transaction because I trust the decision my IA made.

- Insurance is provided by the lending firm as a part of the package or purchased separately in a manner similar to the loan.

- Once the payment is made, the vehicle is electronically registered with the appropriate government agencies

- The VO is dismantled and event traces are logged and sent to federal archives for trace-back and regulatory purposes.

- After the purchase, my agent fine-tunes my personal Balance Sheet to ensure that it is always optimized.



...

extended the reach of financial services. Companies like Zopa and Prosper played the Napster role.

At the time, the peer-to-peer lending success stories created a big fuss in the media. Remember that teenager who made a fortune in mortgages by the age of 18 after starting off by being a skilled player in a virtual role playing game? Having accumulated so many assets in the virtual world, he started to lend them to other players and became skilled at risk and credit control. He eventually became a leading online

Figure 4.3 Peer-to-Peer Lending in 2008



#### Enabled by Robust Risk Management

- Borrowers post their credit scores on the site – lenders have a choice not to fund people with poor credit history
- Risk of each loan is diversified between a number of lenders
- In case of default, debt recovery service providers get involved, just like in traditional bank lending
- Default rates are posted publicly by credit category to help users make decisions on interest rates

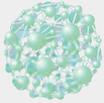
mortgage broker in the real world after he realized there were no regulations to prevent him applying the expertise he'd gained through playing online.

It was quite a revelation – if somebody can match borrowers and lenders in a way that gives them all a better deal than banks do, and if there are no regulatory restrictions, then who needs banks? Peer-to-peer lending proved to be the first in a long line of niche services that ate into the traditionally exclusive preserve of banks. While borrowers sought lower interest rate loans, the rate of return for lenders was still high enough. Risks for the lenders were addressed by choice of credit risk, spread of risk and collective responsibility for borrowers belonging to communities. The increase in membership of peer-to-peer lending is faster than the analogous Paypal's growth to 25 million members after three years in business.

Entrepreneurs jumped on the idea that they could compete with some specific services that banks traditionally offered, but without being subjected to all the regulations. This was especially significant as regulatory compliance costs were driven up by terrorism and fraud. Entrepreneurs flourished as “matchmakers” of loans, quickly expanding to business networks around the world.

Though their potential was far from fully exploited in this initial period, we started to see the wider implementation of SOAs. These consisted of relatively simple modular components from which you could quickly and flexibly assemble powerful systems at a much lower cost than the systems that banks had always relied on.

As banks were trying to cut costs and improve efficiency through technological advances in their monolithic software systems, SOA and componentized operating models were enabling new players in financial services to make progress. This trend was fostered by governments in many leading economies, keen to promote healthy competition in financial services. Regulators required infrastructure components to



## Note

<sup>2</sup> See box page 35: Identity, Privacy and Authentication

...

be released under open source licenses, which made it easier for new entrants to build the systems they needed. The really exciting innovations in financial services weren't coming from the big banks. In addition to peer-to-peer networks, we increasingly saw new entrants like telecommunications companies, software firms and retailers offering alternative financial services that harnessed advances in messaging and Web-based-technologies.

The middle classes were eager to take a proactive approach to managing their risks. Established financial services fell short to meet the demands from rapidly growing middle class looking for personalized services. Soon a new wave of businesses took over and offered custom-made choice with transparency, as technology facilitated easy comparison of products, services and prices.

Consumers were further encouraged to move away from banks as investments in security technology tackled the issue of identity theft. People became willing to entertain the idea of independent, dedicated third party security providers guarding their private information and digitally authenticating them as required<sup>2</sup>. And they became increasingly unwilling to entrust banks with their personal information, as they suspected banks had loose controls and were even sharing their data with other banks. Power was trickling away from banks and towards consumers. As we will see when we discuss the next period, this trickle soon became a flood.



### Regulatory regimes played a major part, too

Posted by **AAA Banker, Brasilia,**  
7 February 2021 03.11

I must say, Techtimonious, I think you're overstating the importance of technology. In my view, the real drivers were changes in regulatory regimes made possible by benign global economic conditions. I retired just two years ago from one of the big banks, and I worked on international regulation as a regional manager on three continents so I know what I'm talking about.

A truly globalized investment market opened up because of Regulation National Market System (RegNMS) in the US, Markets in Financial Instruments Directive (MiFID) in the European Union, and the Basel II accords on capital adequacy rules. With 90% of countries committed to these new regulations, we started to see an unprecedented level of cross-border operations, both legal and commercial. In parallel, the old national stock exchanges had started to consolidate into new global exchanges, better able to serve global investors.

Techtimonious, you give the impression that big banks were struggling during this period and doing nothing much. Let me state that it's not true at all. There was a huge amount of consolidation between 2007 and 2010, both nationally and globally, to meet the needs of corporate and individual consumers in an increasingly globalized world. Banks were at the very forefront of the openness revolution through standardized regulation, and were highly profitable because rates remained so favourable. Frankly speaking, the inroads made by non-financial entrants such as retailers and telecom companies were pretty negligible. This was a boom time for the banks.




25 January 2010

**Frequently Asked Questions**

**Identity, Privacy and Authentication**

**Q1. Why are people so concerned about identity and privacy?**

You are being asked explicitly for more of your personal data nowadays. And still more is being captured about your daily activities – sometimes without your knowledge. This personal data has a growing commercial value. It's not just your name, date of birth, and home address that will be perfectly remembered in many computers, often Internet-connected. There's also a lot of "soft data" about you:

- Financial information such as your bank accounts, salary and investment portfolio
- Your medical, healthcare and prescription records
- Details of your buying habits
- What websites you've visited and what you did on them
- Location-based data like where you've been in stores, in cities, and on the roads

This data has many beneficial uses, of course, helping to make our lives and digital transactions more convenient. But you have no way of knowing about other possible uncontrolled uses of your personal data.

**Q2. How are technological advances affecting concerns about privacy?**

First, **information capture** has been facilitated through developments such as:

- Embedded microchips in TVs and other gadgets and appliances
- Bluetooth and other wireless devices that provide data about your location
- Smart cards which accumulate records of your consumer preferences
- Interactive TV that tracks your viewing and buying history
- Biometric data on who you are

Second, **information use** has become more sophisticated because of datamining and analytics, behaviour tracking and prediction, and intelligent agents and bots (robots).

**Q3. What can be done to address these concerns and make our identities secure?**

Unfortunately there's no panacea yet. The best answer currently available involves a combination of biometric technologies (fingerprint, face, iris, voice, heat signature) and permission-based, user-initiated release of personal information stored in a centralized digital identity database for all online transactions.

Two years ago, a supranational project was launched to make this a reality. Identity Guardian (IG) is independent of any government and will guard personal identity data in a way that keeps pace with the changing digital environment. IG is creating a digital security management system by drawing on the expertise of telecom companies, Internet service providers, banks, credit card and credit scoring firms, security companies and Interpol.

This system will strike a balance between institutional needs for identification and to prove your credentials, and the human desire for anonymity and privacy. IG will release personal data only with your authorization and only for the duration necessary to execute a transaction. The data will dissolve upon completion – though it will, of course, be logged when necessary to meet data retention requirements for regulatory and compliance reasons.

[http://answer.com/frequently\\_asked\\_questions/](http://answer.com/frequently_asked_questions/)

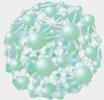

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**Sophie**, an Identity and Privacy Consultant from Identity Guardian answers.



### It was people power – we lost our trust in banks



Posted by Gadgetman, Shanghai,  
8 February 2021 22.02

Technology and regulation played their parts, but I would say it was people power above all that drove the revolution. What I remember from this period is that people of my generation were getting used to technology that gave us a variety of choices in our lives. We were getting fed up with how banks were treating us.

To be fair to you, AAA\_Banker, it's true that many banks did respond to competition by offering us ever more fantastic-sounding deals on loans, mortgages, investments, and the like. The problem was that my generation just lost our faith in banks. We'd seen how our parents had put their trust in banks only to be sold dodgy investment packages and underperforming pensions.

Frankly, people like me just didn't trust the banks. We thought they might try to sneak something past us in the small print. That's why the role of independent human advisors, which of course eventually gave way to Intelligent Agents, just kept on growing.

### Trust nobody but yourself and your E-Ring



Posted by Incredulicious, Tokyo,  
9 February 2021 01.03

Those banks must have been unbelievably bad if you preferred to deal with independent human advisors instead – those money-grubbing, blood-sucking parasites, always wanting their 0.15% of everything and taking anything up to five minutes to process a standard multinational currency transaction. You're happy with that? Well, I suppose when you get to your age you're happy to wake up in the morning. No offence, guys!

But seriously, the only person I trust with my finances is me, ably assisted by my trusty E-Ring. I assume you know what an E-Ring is? Check out the

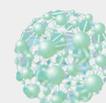
### 2011-2015 – Unexpected speed of revolution



we didn't pay enough attention to the underlying changes you identified in the nature of human behaviour and the power of technology. In hindsight, we could have been more proactive in leading the way.

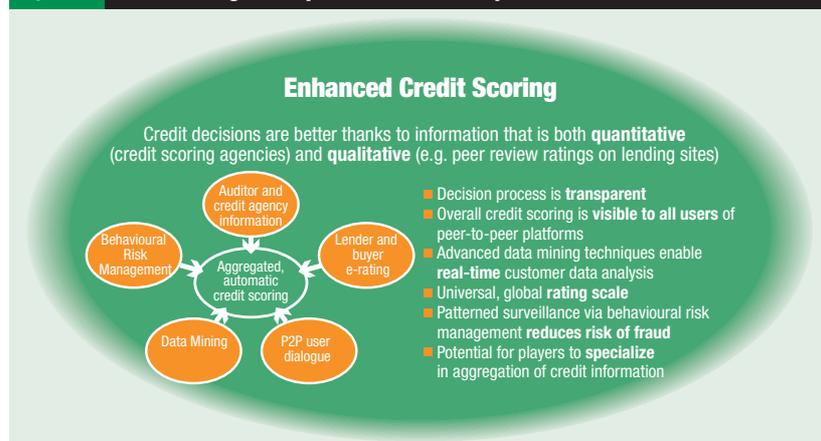
Posted by Techtimonious (moderator), New York,  
10 February 2021 05.11

How quickly new generations change their expectations! Well, Incredulicious, you'll be as happy as I am that I woke up this morning so that I'm able to continue this narrative. And indeed I have heard of E-Rings. I like to keep up with the latest tech devices. And while it's true, as AAA\_Banker comments, that the big banks were



mostly unaffected by the earlier stage of the technology revolution, that changed in the first half of the 2010s. The big banks started to look like dinosaurs, plodding slowly along while the climate turned dark and chilly. Money was still pouring in, to be sure, but they remained stuck with their lumbering, monolithic old systems that were built to do thousands of things in an inflexibly standardized way for everybody. Meanwhile, new players, unencumbered by existing systems, were forging ahead with service-oriented architectures, which had been around for a while but were really coming of age. Modular architecture and technology allowed providers of specialized financial services to build or disassemble and rework their business systems like Lego blocks. And because they were using modular components built on open source software it was easy for them to collaborate and interact with each other. Interconnection and system integration costs dropped radically, as if Moore's law now applied not only to hardware but also to system integration and design. Regulations also became

Figure 4.4 Credit Scoring Techniques Become More Sophisticated

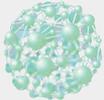


increasingly harmonized, so the flow of financial transactions became nearly seamless.

Technological innovation continued apace: in particular, advances in business intelligence, datamining and behavioural risk management led to much more subtle and sophisticated credit scoring techniques.

A bewildering array of financial services became available, initially only for institutional clients but soon for individuals, too. Alongside the exponential rise of peer-to-peer lending, specialists emerged in areas like payments processing, credit information aggregation and risk management. Barter networks for businesses enabled trades of everything from office supplies to back-office services like document processing and currency swaps. Agile service providers were constantly identifying underserved niches, building systems quickly and marketing their services with immediate impact.

China and India led the pioneering efforts. Both boasted troops of highly-qualified information IT engineering graduates from prestigious local institutions. With support from governments keen to help financial services reach distant communities, they built flexible applications with open source architecture that took away the frills and focused on the essential. Telecom companies and retailers devised intuitive and user-friendly ways to bring financial services to sectors to the unbanked population. Principal examples are Voice Short Message Service (VSMS) and colour-coded messages for those unable to read.



...

As improvements in digital infrastructure brought Internet access to the remotest corners of China and India, even the poorest of the poor started to have access to the information they needed to become customers of financial services. Micro-finance institutions automated and improved their services, while traditional banks employed trusted local advisors to help acquire new customers.

Back in the developed countries, the established banks came under increasing pressure as barriers to entry got even lower and new entrants continued to chip away at the most profitable parts of their business. The big banks aspired to own the entire value chain, but they failed to understand in time how fiercely they needed to compete with “last mile” distributors such as e-retailers and telecommunication companies. They were left providing mass commoditized payment processing services that didn’t add much revenue.

Trying to change their structures proved a nightmare, but eventually the big banks caught up with the new players and started to get the hang of SOA. This gave them better control of their multiple systems and made it easier for them to comply with regulation and connect with the outside world. It allowed banks to spin off divisions that were under the fiercest competitive threat, while retaining a technological link that enabled them to capitalize on the smart use of information they already possessed. Some of the spun-off divisions, with lean systems based on open-source architectures, flourished as specialized businesses.

Customers were becoming ever more demanding of financial services providers, partly because they had increasingly powerful technology at their fingertips to help them search for the best deals. Many of the growing number of older citizens started to experiment with new financial services on the Internet that offered intuitive touch-screen operations for the less tech-savvy. They gained confidence in their ability to manage their own pension plans and investments without shelling out expensive commissions to banks. Instead they relied on the help of peers in online forums.

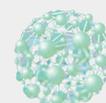
Given the complexity of choices, many people still preferred to run their options by a trusted independent human adviser. Intelligent Agents required high levels of hardware processing power, but as the cost for processing dropped to affordable levels, investors became more confident in their ability to go it alone. Individuals gained access to powerful technology that could do more than execute instructions; it could interpret information. Insights from economic psychology and behavioural finance allowed the gadgets to factor in the irregularities of human reactions to changes in market conditions, so they could cope with limit orders on complex market conditions and not just on simple factors like stock prices.

I remember how impressed I was with what I could do with my IA at the time. But  more striking advances were still to come, as I shall discuss in the next post.

### **Banks were effectively forced out of the consumer marketplace**

Posted by [AAA\\_Banker, Brasilia](#),  
11 February 2021 13.44

Your “dinosaur” comment is a bit harsh, Techtimonious. Lots of banks innovated, and in a highly successful manner. The bank I worked for made real breakthroughs in this period, notably in consumer loans and business-to-business barter networks. We also made valuable contributions in steering the world towards standardized



But it's true that many banks suffered from "middle manager inertia". Fear of redundancy held back the launch of new services that threatened traditional parts of the business. It's also true that banks were losing their intermediary status and no longer made money from the entire value chain. They had to identify their core competencies and profit centres. Some morphed into specialized distributors, white-label product manufacturers, and support function specialists. In general they focused on traditional corporate and governmental banking, providing the financial network backbone to support global liquidity.

#### Consumer-to-consumer exchanges helped me manage my assets



Posted by Gadgetman, Shanghai,  
11 February 2021 14.01

It was in this period that I became a big fan of the consumer-to-consumer lending networks. Like many people I was travelling internationally a lot to advance my career – I worked in six different countries between 2011 and 2015, and I had investments and savings scattered all over the world. I relied on a site that enabled me to barter bonds, equities, and currencies. It took care of all the processes for transferring rights and had Intelligent Agents to advise me on how to make my portfolio best match my needs.

#### New kinds of financial service helped my tax advice business flourish



Posted by The\_Tax\_Adviser, Dresden,  
14 February 2021 10.02

You were ahead of the curve in not needing a human agent, Gadgetman, or maybe you didn't get the most out of the software? To start with, Intelligent Agents weren't as sophisticated back then. Basic functions were intuitive, but to fully exploit the clever customization tools that could plan investments according to individual tastes and life plans, you needed expertise. I recall I spent more time learning how to customize software than I did keeping up with changes in tax laws – my busy clients didn't have time for this.

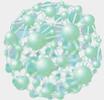
But it was worth it. The more I used the software, the better and more responsive it became, and I was able to find some excellent deals for my clients on consumer-to-consumer networks that beat anything a bank could offer. Nowadays, IAs are so easy to use that most young people in developed countries are at ease with arranging their finances without the help of someone like me, but my business is booming because of growing demand from other parts of the world.

#### 2016-2020 – Power to the people

Banks also put regulations on capital markets and risk assessment first for retail banking and then for peer-to-peer platforms and other service providers.



Posted by Techtimonious (moderator), New York,  
15 February 2021 06.12



## Note

<sup>3</sup> See box page 41:  
QuantumSix

## Note

<sup>4</sup> See box page 42:  
Semantic Web

For the kind of transactions most of us want to carry out, though, the period 2016 to 2020 brought still more radical advances in technology. This has been made possible by the maturing of utility computing, which enables massive processing power from millions of individual computers to be harnessed in short and intensive bursts as needed. But most of the building blocks of the technologies we rely on are invisible to us – there are so many layers of abstraction, and we have so many helpful software interfaces to make the connections and mask the complexities<sup>3</sup>.

Full implementation of global standards on multi-feature biometric security has made it nearly impossible for someone to steal your identity. Intelligent Agents have become increasingly adept at turning information into knowledge and using modelling and analytics to examine numerous scenarios in real time. This constantly improves the quality of its recommendations, assessing the risks and benefits of the vast choices available. It also can play providers off each other to get the best possible price and structure for the desired transaction. Corporate managers have come to rely on IAs as much as individual investors.

The main step forward, though, has been the emergence of the Semantic Web<sup>4</sup>. The Internet has been hugely enriched over the last couple of years by SymNet, a semantic technology that can not only consult online indexes to look up information as the old search tools did, it can also extract meanings out of scattered data and trends. Because of SymNet, you no longer have to teach your IA about your financial situation and your personal preferences. It can collate and make sense of information from tax or medical records held by third-party data guardians, from the websites you visit, the reviews you write, and even the comments you leave on your friends' blogs.

As I said in my introduction to this series of posts, we quickly come to take innovations for granted. It's hard for us to remember life before the technologies and business models we rely on today, let alone to imagine what life might have been like if things had happened differently. This makes it appropriate to introduce the eminent economics guru, Dr. Fork Fingers. In 2020 he published a study that estimated that global financial services revenues are nearly 17% higher than they would have been if the banks had continued to consolidate their dominant position.

### We need to go further and faster!



Posted by **Incredulituous, Tokyo,**  
20 February 2021 16.41

Yeah, yeah, who cares about your "what ifs"? We should be concentrating on fixing the terrible delays and inadequacies that blight our financial services industry today. It took a bank in Windhoek over an hour today to open an investment account for me, and then my E-Ring made me wait 20 seconds to convert renminbi into Namibian dollars to deposit. You guys might think we've come on in leaps and bounds since you were young, but tomorrow's generation isn't going to enjoy waiting minutes to conclude a deal any more than I do.



# FINANCIAL TIMES

18 May 2016

## Asia-Pacific Financial Services Award Ceremony

### Shaan Parekh gives his acceptance speech after QuantumSix wins the award

Some of you may not already be customers of QuantumSix, so I'll try to explain what you're missing. When you sign up, you are given a virtual client – one that you can access from almost any device, that gives you access to as much computational power and storage as you need.

Continuously – in real time, with live inputs – QuantumSix runs lifetime financial simulations that advise you how to manage your personal cash, your budget, assets and debts. You can decide what information to make available – where you bank, where you save, where you spend. The more you allow QuantumSix to know about you, the more powerful and useful it is as a tool. Seeing the value of recommendation and advice, 70% of our customers have enabled QuantumSix to automatically manage their financial assets and liabilities.

If you like, you can specify your own parameters manually instead of letting QuantumSix's algorithms work it out from your user profile. If you do this, QuantumSix can show you the difference in outcomes over a number of timelines between your parameters and its recommended ones.

But perhaps the biggest impact has come from QuantumSix's accessibility. For a few cents a day we offer a service that private banks in Switzerland could once only dream of giving their billionaire customers. Thanks to its accurate voice-only interface, it's available to anyone with a mobile phone. That now means over six billion people around the world. You can see why – despite boasting over 300 million customers – we are still very excited by our opportunity to grow.



# semantic-search.net

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## Your query:

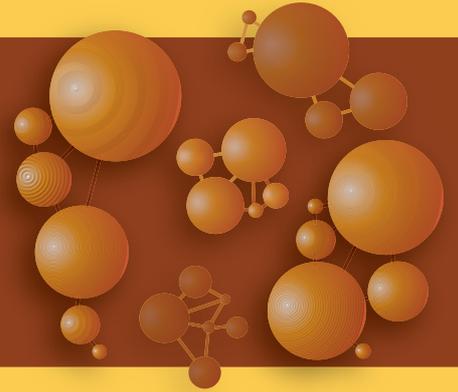
**“Find me a definition of ‘Semantic Web’ that’s about 150 words”**

> **Semantic Web**, noun

The Semantic Web is a new generation of the Internet, so called because it allows computers to understand context and meaning. The Semantic Web can extract data from documents or tags, then interpret, organize and relate that data to the real world. It can identify, for example, a “packaged tour” as a type of holiday, “Italy” as a destination, “€599” as a price, and “my mother” as a specified individual, and understand how they might fit together – supporting product searches like “vacations in Europe for under €600”, or photo album searches like “my mother’s trips to Italy”. The Semantic Web is an open platform, not an application – it is based on common standards through which computers interact with each other, enabling content to be broken down into smaller components and industry to become more specialized. It underpins intelligent agent software, utility computing and new technologies in information management.

Section

# 5 Innovation Islands





# Scenario

Section

# 5

## Innovation Islands



### “Innovation Islands” Ready for a new era of global trade

27 February 2021

The Hindu brings you the synopsis of speeches to the 10th Annual Indian Institute of Technology (IIT) Financial Services Innovation Awards ceremony held yesterday in Chandigarh.

There was an international flavour to this year’s ceremony. The IIT seemed keen to emphasize the increasingly outward-looking orientation of India’s financial sector. Distinguished guests from China and Germany were invited to join Sudeep Singh, Minister for Technology and Competitiveness, on the judging panel. The awards were presented by Anyango Selim, the United Nations Undersecretary General for Financial Inclusion.

Anyango Selim opened the ceremony with a speech that looked back on the last 14 years in global financial services and the environment surrounding the industry. She emphasized how globalization stalled in the years leading up to 2010 and, as direct and indirect barriers were built, the retail and wholesale financial services industry became more regionally – and, in many cases, nationally – focused.

Across the different regional blocs that emerged, Selim explained, there were strong differences in the rate of change and innovation in financial services. She identified India and China in particular as countries that succeeded in fostering creative and competitive business climates. Both countries became “innovation

islands” in financial services – each having followed a different path – while many other regions suffered from relative stagnation and lack of efficiency.

Minister Singh used his speech to look back on how the Indian government effectively nurtured the development of India’s financial services industry. It was seen as a vital part of the overall strategy for national economic development, he said.

Deming Wang, Governor of the People’s Bank of China, then provided some historical perspective from his country’s point of view. Both Minister Singh and Governor Wang stressed how encouraged they were by recent signs heralding a possible end to inward-focused policies around the world. Both expressed confidence in the ability of their countries to thrive in a more globalized financial services market.

The final speech was given by Jochen Zimmer, Chief Executive Officer at Germania Bank. He discussed how large banks in established markets took a different approach to technological innovation than did institutions in India and China. This was appropriate given the nature of the markets they were serving, he said.

As ever, we welcome your feedback. The best of your emails will be published in a special section of tomorrow’s Hindu.



## Transcripts of speeches at the IIT Financial Services Innovation Awards ceremony, Chandigarh, 26 February 2021

### **Anyango Selim, UN Undersecretary General for Financial Inclusion**

You may be wondering why I, as a representative of the United Nations' Commission of Financial Inclusion, expressed such eagerness to be present tonight. The reason is this: your country, India, stands out – together with China, and a few others – as a leader of innovation in the field of financial services.

You have fundamentally transformed your financial services industry and expanded access to it by capitalizing on the use of technology. The resulting highly innovative and low-cost financial services industry has enabled greater entrepreneurship, encouraged more equitable economic growth, and provided a stimulus to many sectors and many regions – both urban and rural. As a result, great strides have been made to improve quality of life and alleviate poverty. The rest of the world has a lot to learn from you.

This awards ceremony is celebrating its 10th anniversary. But to set the context, allow me to go further back in time and give my historical perspective on how the financial services sector has evolved over the past 14 years as part of the global environment. I will specifically distinguish three periods of change, each spanning four to five years, starting in 2007.

### **Globalization stalls and barriers rise:**

#### **2007-2010**

Not long after the turn of the millennium, there were signs that globalization was stalling. The reasons were many. They included tension between the United States and China over trade policy and the Renminbi exchange rate, widespread security concerns stemming from international terrorism and the clash of cultures, and the growth of strong negative feelings towards migrants and foreigners in many parts of the world. We saw a crisis of multilateral trade with the suspension of the Doha round of negotiations in the World Trade Organization (WTO) and the surge of bilateral and preferential trade agreements.

China and India were set on honouring their commitments to the WTO – which, back then, was an influential body – and opening their domestic markets to foreign financial services providers. But they found that Western governments were becoming increasingly nationalistic and protective. With a decline in the political will necessary to promote international integration and encourage world trade, the engines of globalization stalled.

In America, the pressures of rampant budget and trade deficits were exacerbated by a slowdown in consumer spending as the housing boom came to an abrupt end. In 2008-2009, the new US administration introduced a series of protectionist measures, aimed in particular



against China but also against others like Brazil, Korea and the European Union.

Protectionist sentiment was also on the rise in Europe, as highly-publicized mergers with foreign players brought job losses and popular resentment.

Negotiations designed to harmonize international regulations became bogged down. A multiplicity of standards on Internet regulation, data security, and identity protection seemed inevitable. We started to see breakdowns of global agreements on technology transfers, university research and development, and global company investments in regional hubs.

The impact of this environment was keenly felt in financial services. Pan-European financial services regulation such as the Market in Financial Instruments (MiFID) was applied inconsistently and even chaotically<sup>1</sup>. Implementation of SEPA, the Single Euro Payments Area, experienced delays.

As we approached 2010 we saw the re-emergence of capital controls, restrictive local ownership rules and other forms of protectionist regulation around the globe. Emerging countries such as India and China continued to allow limited access to carefully selected foreign financial institutions that were world leaders in their respective fields. But generally tight regulation made it difficult and costly for large banks to expand into new markets. In addition, they needed to focus more attention on new competitive pressure from non-traditional players in their core home-market businesses.

### Three trends emerge amid difficult

#### times: 2011-2015

The global economy significantly slowed down as of 2011. This triggered increased

unemployment and popular unrest, which in turn further strengthened the global trend towards national protectionism. International tensions were heightened by heated disputes over trade, natural resources, exchange rates and especially energy security given the increasing volatility of oil prices.

So how did this turbulence affect the way the financial services industry evolved? I believe we can identify three diverging trends that appeared in financial services during this period as countries and regions focused increasingly on their local affairs and evolved in their own different ways:

1. The **“leapfrogging”** trend. This involved fundamental innovation in terms of new business models, operations and solutions. This happened in emerging markets such as India, China and Brazil, and elsewhere - including Singapore and New Zealand.
2. The **“business as usual”** trend. This brought some incremental innovation on products and services, but mostly within traditional business models. This approach was predominant in Western countries and other developed economies such as Japan and Australia.
3. The **“back to the past”** trend. Here, hardly any innovation took place. Sometimes, there was actually a regression in efficiency and quality of financial services. This was the case for many developing countries in Africa, Latin America and the Asia-Pacific region.

The divergent trends translated into the development of very different operating models for financial services, as shown in figure 5.1. This also led to different kinds of innovations being introduced and different rates at which

<sup>1</sup> See box page 47: MiFID has divided Europe



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## It aimed to unite them, but MiFID has divided Europe's financial markets

London, February 11, 2010

It wasn't meant to be this way. The Markets in Financial Instruments Directive (MiFID), introduced in late 2007, aimed to create a single pan-European investment market. Instead, there is more fragmentation than ever, and serious questions are even being asked in some European states about their future commitment to the Euro. How did this happen?

The problem stems from the vagueness of the directive itself. It left much to interpretation, setting no clear timeframe or goals. Some governments regarded MiFID's regulations as too rigid and took a laissez-faire approach. Others watered down rules around client dealings, considering them too difficult to implement. Still others added additional layers of complexity – for example, that all firms must demonstrate trade-by-trade best execution within 24 hours of a request for proof.

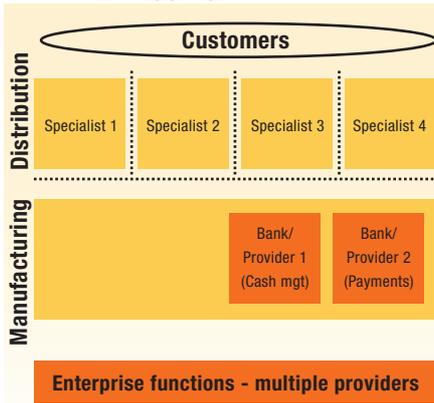
Many firms argued for a single regulator, a European version of the US Security and Exchange Commission (SEC). The European Commission, however, knew that a pan-European regulator would be fiercely resisted by member governments, so it left the member states to sort out the chaos. The result has been confusion, quibbling and capital outflows from Europe to other parts of the world.

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Figure 5.1 **Typical Operating Models and Key Innovations in Financial Services**

### “Leapfrogging” countries



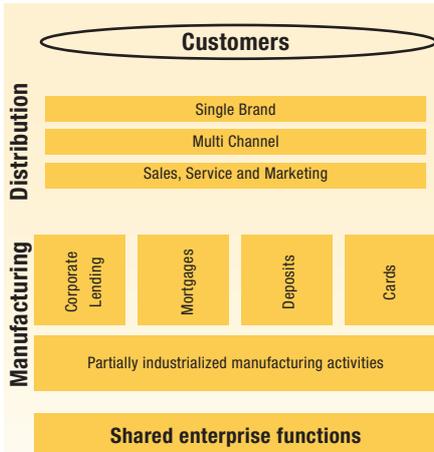
**General characteristics of typical operating model:**

- Local disintegration of the value chain
- Specialised FS and non-FS players, focusing on selected functions
- Capitalizing on experience in provision of outsourced services (India)
- Advanced software innovation drives cost efficiency and emergence of new distribution channels

**Key Innovations:**

- Cashless solutions – point of sales and mobile payments increase access to the unbanked
- Digital Cash – getting control over black markets
- Smart cards - facilitate credit to illiterate population
- Biometrics – advanced solution to address security and fraud issues
- Virtual spaces – new virtual branches and other distribution channels (SecondLife)

### “Business as Usual” countries



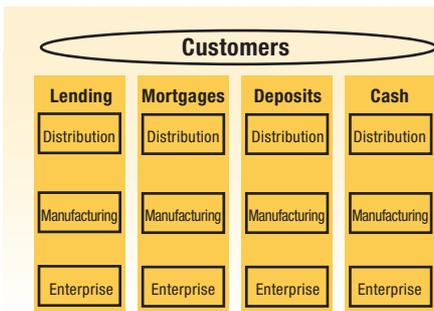
**General characteristics of typical operating model:**

- Reduced customer base as international financial services players withdraw from overseas markets as a result of restrictive regulation and protectionism
- Resulting reduction of transaction volumes makes investments in single platforms more costly
- Manufacturing functions are largely vertically organized across offerings; back-office simplification is limited
- Investments focus on integrated, individualized solutions via multi-channel distribution

**Key Innovations:**

- Branch of the future – enhanced to improve customer experience via customer based integrated solutions
- Virtual experts – improved face-to-face contact via video in branch and via internet
- Data mining and advanced analytics – better knowledge of customers through real time data
- Biometrics – advanced solutions to address security issues

### “Back to the Past” countries



**General characteristics of typical operating model:**

- Vertically-organized “silo” structure with no shared platforms to enable simplification
- Duplication of processing activities across product groups
- All operations are owned in-house
- Limited cross-sell opportunities

**Key Innovations:**

- Biometrics – limited impact due to the heavy regulation, especially regarding management of personal customer data

■ In-house ■ Outsourced



these innovations took hold.

Allow me to elaborate further.

### 1. Leapfrogging

In large “growth” economies such as India and China, there was still much poverty. Enhancing access to financial services for the poor and the unbanked was a priority that was considered key to economic and social development.

Given the difficult international environment, the Indian and Chinese governments insulated their financial services industries from external competition to a large extent. At the same time they strongly encouraged domestic competition by lowering barriers to entry for new players from other industries such as telecommunications companies.

These governments also targeted education and basic infrastructure as ways to improve conditions for the domestic financial services market. They strongly supported the development of technological infrastructure to make digital inclusion a reality and the delivery of governmental, health and financial services electronically at affordable costs.

I trust Minister Singh and Governor Wang will tell you more on how their respective countries progressed with local innovative solutions that were best adapted to meet their respective market conditions and demand.

It is worth noting that other, smaller countries have also been able to develop local highly innovative financial service environments. Singapore, for example, developed a very exciting programme that has nearly transformed that country into the first truly cashless society. Electronic payments through the e-Singapore Dollar (eSGD) have nearly replaced cash and credit card payments altogether<sup>2</sup>.

<sup>2</sup> See box page 50: Singapore Cashless Society



Merlion Enterprise Union Bank



Singapore's Cashless Society project has come a long way since the government appointed **Merlion Enterprise Union Bank (MEUB)** to lead the project in 2008 and the **e-Singapore Dollar (eSGD)** was launched in 2010.

The Cashless Society project was conceived when it became clear that authenticating payments by confirming something one *has* (cards, chips) and something one *knows* (pin, code, password, signature) was no longer sufficient to combat fraud and identity theft. A new dimension on verification by something one *is* (biometric using iris, fingers, or palm) was introduced.

The eSGD uses chip-based contact-less Radio Frequency Identification (RFID). Data storage was no longer restricted in the form of cards; payment functions have been integrated into devices people carry all the time, including watches and mobile phones. Low-value transactions such as buying a newspaper or tipping merely require individuals to agree on the amount and give the go-sign on their devices. For higher value payments, credit ratings, available funds or loan qualifications at a designated bank can be reconciled in a fraction of a second.

The eSGD cuts the cost of payments and speeds up settlements. It increases transparency and aids tax collection by limiting black markets and enabling the government to track fraudulent transactions. Tourists visiting Singapore are now required to rent a device on arrival, making a deposit or linking it to their credit card, and by 2022, MEUB believes eSGD coverage will be almost universal.



## 2. Business as usual

International banks headquartered in the US and Europe found it difficult to thrive in emerging economies in an environment of increasingly restrictive regulation of foreigners. This led them to retrench in their profitable home markets, increasing competition in there – especially given the already high degree of market penetration.

Competition was initially exacerbated by pressures from new players in the financial services arena. But those new players suffered from the general atmosphere of paranoia and suspicion caused by high rates of digital fraud and chronic concerns about national security. Consumers in general became more conservative and risk-averse, while many in the older generation turned away from using the Internet as a way to buy, sell or trade anything. As consumers increasingly valued face-to-face interactions, reliability and trust, established and well-known banks gained a clear edge over new players.

Competition among established banks was fierce. It led to both consolidation and some interesting innovations in products, distribution and sales channels and services that I am sure Mr. Zimmer will tell you about.

As the promise of a globalized world faded, so did any advantage of scale that would have come from having a central global factory to handle a full line of products. Certain banks achieved some centralization of manufacturing, but their focus was more on integrating distribution and dealing with customers.

## 3. Back to the past

Many national governments in regions such as Africa and Latin America wanted to strengthen economic sovereignty through tighter control of the financial services sector. Prevalent concerns about national security and fraud reinforced this trend.

In some cases, large domestic banks were nationalized; in others, collaboration agreements were established between governments and local champions deemed to represent “national interests”. Regulation was heavy and strict – part of an attempt to protect indigenous financial institutions from foreign competition and international interference. This reduced competition and stifled healthy market forces. Potential local innovators or new players in financial services had very little flexibility.

In these countries a handful of incumbent banks, increasingly influenced by the state, faced little real competition and minimal incentive to try new ideas. The quality of financial services for both corporate and individual customers stagnated or even deteriorated. Prices were high. Branch offices remained the primary distribution channel and were overhauled, but video-based and digital technologies were rarely adopted.

The smallest developing markets offered the most extreme examples. National champion banks fully retained all operations in-house, and they were vertically organized according to product lines. Products and services were limited in both quantity and quality and proved inadequate to meet demand.



## Light at the end of the tunnel:

### 2016 to 2020

For most of the past five years, we have seen a continuation of these three diverging trends in the various countries. But recently there have been welcome signs that the mood in international relations could be shifting. I believe there may be a growing consensus favourable to reopening world markets and breathe new life into the ideals of globalization.

I warmly encourage the efforts of India and China to export their innovative financial services solutions to the rest of the world. I believe, as they do, that the time is ripe to abandon the single-minded pursuit of locally developed solutions and again look outward. The best way to ensure high and equitable growth is

#### Newspaper Headline Excerpts

### InDiCi opens branches in eight European countries

*"Low cost base will help us conquer EU", says India's second largest bank*  
22 March 2008

### InDiCi to pull out of five of its eight European bases

*Bank cites "excessive regulatory burden"*  
13 August 2010

## Sudeep Singh, Minister for Technology & Competitiveness in India

I would like to thank you, Ms. Selim, for setting our event tonight so articulately in the global context and providing the background against which many developments took place in India.

I don't want to dwell on the difficult times, but allow me to read to you two newspaper headlines from back then which I believe say it all about how we Indians felt. Tremendous hope was followed by tremendous deception as we realized that our efforts and compromises to open up to the rest of the world were not being fairly reciprocated by the international community.

As the global economy slowed after 2011, our government realized that we needed to react. Along with China and Brazil, we decided to withdraw from the Basel II accords. We stipulated that foreign banks that wanted to do business in our country must comply with our own local capital adequacy regulations. In 2012 we introduced the "OpEx rule", according to which only firms with an operating license in



India could execute share trading for Indian-listed firms.

Naturally, we were aware that protecting India's financial services industry from global competition could decrease incentives to innovate and be competitive. But our intention was to give the sector the breathing space to mature in light of its importance in supporting domestic economic development in the closed international environment.

And, in certain respects, we already had an innovative financial services industry. The sophistication of our trading and financial instruments had mostly caught up with advanced markets. Our financial industry was already going into underserved areas with innovative low-cost point-of-sales and branchless mobile solutions. Bank offerings included products specifically tailored to various customer segments, such as cashless payments for auto rickshaws and virtual wealth management advice for farmers in remote rural areas. This helped encourage people to stop keeping cash under the mattress and begin earning interest. We were at the forefront of biometrics, which supported identity establishment and validation. Biometrics was one of the basic requirements – and a big challenge – in providing financial services to the poor because no unique identification system was universally available and the risk of fraud was high.

We knew there was still much work to do to achieve the quality and level of penetration in financial services coverage that would enable us, in time, to ensure economic growth and lift our population out of poverty. In these difficult times, we charted our own path. We approached this task of promoting financial access in three main ways:

- First, we invested heavily together with the private sector in infrastructure to support digital access. Some of you may remember the launch of the three-phased Common Service Centres (CSC) programme back in 2007. The first phase created 100,000 ICT-enabled kiosks across the country. Phase II and Phase III aimed to create digital access for every household in urban areas and at least one communal facility in every village. Along with our high-bandwidth national Internet network fully tested for security purposes, CSC caused a tremendous change in the environment to deliver financial services.
- Second, we very selectively allowed a few leading international financial corporations to conduct business in India's retail and wholesale financial services markets. This challenged our domestic institutions to learn from them and compete with them.
- Third, we encouraged local competition from outside the financial services industry through a flexible and "laissez-faire" approach. We wanted telecoms, retailers and others to enter the financial services market with local innovation that would lower costs and increase access. We also contributed to a pool of local venture capital to drive these innovative business models forward.



<sup>3</sup> See box page 55: Improving Access for the Un-banked

We were fortunate in that we could count on our young and vibrant people. Our infrastructure improvements helped to empower hundreds of millions of newly economically active urban and suburban youth, who became highly sophisticated in using the Web. Without doubt this opened up opportunities and encouraged creative minds to experiment with new ideas.

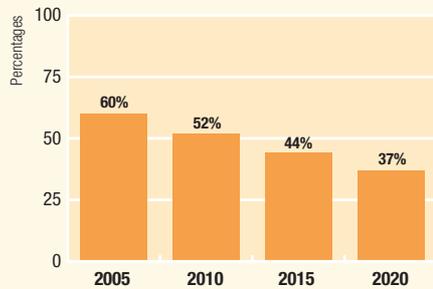
Furthermore, large numbers of highly educated and experienced young professionals left their employers in San Francisco, Toronto

and London and returned to their homeland when globalization declined. These young professionals brought not only knowledge and skill but also entrepreneurial drive and know-how. A remarkable group of social entrepreneurs emerged in Bengaluru and Chennai. They implemented practical computer and net-literacy programmes for young people to enable them to contribute to economic development in the next generation.

Our country's strong ICT capabilities and relatively limited legacy systems allowed us to

**Figure 5.2 Decrease in Number of Un-banked in India**

Percentage of total Indian households with no access to banking services\*



\* Banking services are provided by commercial banks as well as any alternative financial institutions such as microfinance institutions (MFIs)



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## Improving access to financial services for the un-banked

18 September 2018

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In the 12 years since Mohammed Yunus, founder of the Grameen Bank, received the Nobel Peace Prize, financial planning for the poor has taken off. **IT companies** developed mobile handsets priced under US\$ 30, lower-cost software designed for developing countries, Internet kiosks in rural areas, and computers with powerful dust filters that could run off car batteries. Biometric-incorporated bank cards and voice SMS compensated for illiteracy as nothing needed to be signed.

### First Access to Financial Systems



As technology became more widely available, **micro-entrepreneurs** found innovative ways to bring its benefits even to the most poor and marginalized. And as remote and less-educated people started to access more knowledge, they became **empowered** and demanded better financial planning services to increase their control over their own and their children's fortunes.

Forward-looking **banks** began to find flexible ways to add new kinds of behavioural information to their in-house credit scoring models – for example, experimentally lending small amounts to test for eligibility for larger loans. Meanwhile the smartest **governments** created policy frameworks that encouraged innovative business models and solutions rather than a replication of those in the developed world.

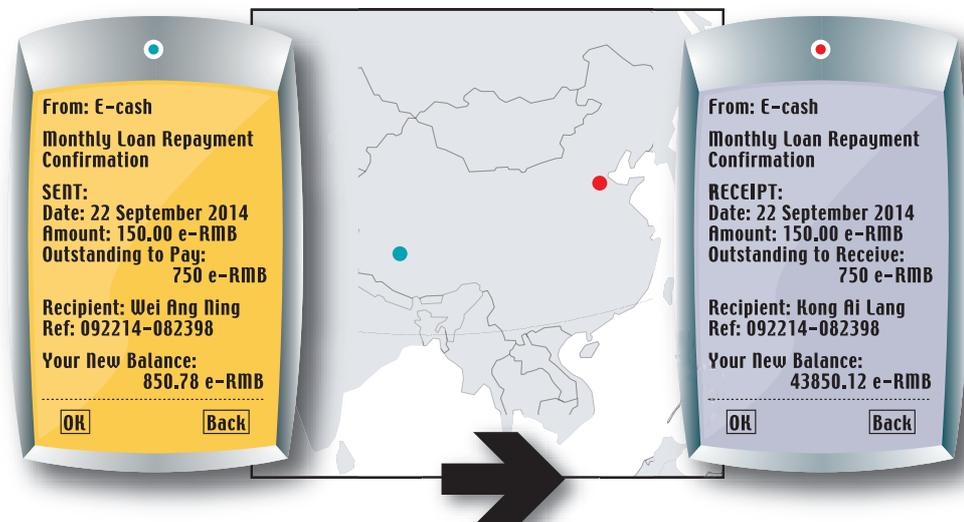


leapfrog over Western financial institutions. We created modular operating models that allowed us to be focused, flexible and to cut costs. And our highly secure national digital infrastructure led to the rise of peer-to-peer networks, both for individuals and corporations. Admittedly, these types of networks were taken up earlier in the Western countries. But we learned from their success and failures.

The combination of these various initiatives and programmes created the modern financial services industry in India as it is today. All these efforts led in time to a remarkable improvement: we reaped the rewards in greater social inclusion. Many of our poorest citizens, in both urban and rural areas, began to benefit from financial services and products adapted to their needs, and this has helped them to improve their social condition<sup>3</sup>. The latest figures from 2020 indicate a 16% decrease of un-banked population over the past 14 years (figure 5.2).

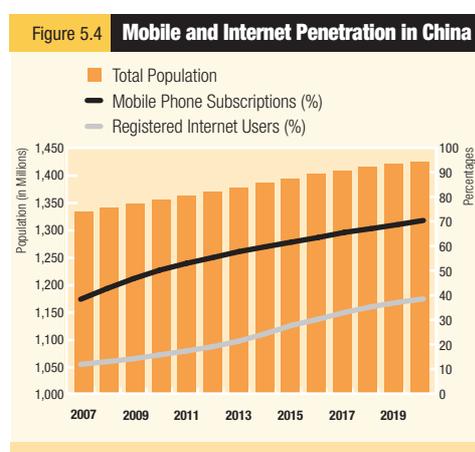
I have learned much in recent days from my conversations with Governor Wang. We are both cautiously encouraged by the recent uptake of multilateral trade negotiations in the so-called “Bangkok Round”, which has given some hope of much-needed progress in the lowering of global trade barriers. With our strong foundations of technological innovation

Figure 5.3 Small Loan Repayment Through Mobile Phone





in financial services, both India and China feel that we are ready to compete in the global market – provided that the market environment



allows for our venture.

### **Deming Wang, Governor of the People's Bank of China**

You Indians have a great deal to be proud of. On behalf of China, I can assure you that we want to work together to build a stronger regional financial market that benefits all of our people.

Minister Singh rightly talked about the success of India's policy of limited foreign participation in exchange for technical and management expertise. I must also claim some credit for my country here, as by 2011 China was already well advanced with a similar policy. As global barriers were raised again, the Western global banks – who already had a good footing in our country – chose to continue working with us. Even though they were limited to fractional participation, they saw it as a long-term investment.

We capitalized on their expertise in enterprise governance to encourage our banks to become

more effective and efficient. But we were aware that this improvement might be slow, and wanted to rapidly extend financial access to the large un-banked population to tackle poverty and encourage growth. So we also relaxed regulations to entice private entrepreneurs and efficient players from other industries into the financial services arena.

As a result, new business models emerged – mostly enabled by wireless, mobile and Web-based technologies. Mobile phones were particularly important in providing access to payments and remittances to rural dwellers, urban migrants and others whose access to banking was limited. Entrepreneurs working with microfinance and alternative financial institutions established a scheme to enable small loan payments via mobile phones.

Mobile phone penetration has been increasing steadily, recently reaching 70%, compared to 40% for Internet access.

It is interesting to hear Minister Singh speak about how your Indian tradition of ICT innovation helped you to develop the type of modular, component-based architecture that, as everyone now recognizes, offers great flexibility. We came to the same solution through sheer necessity: only by using a modular approach could we build new back-office systems and manufacturing platforms relatively quickly.

Minister Singh also rightly expressed pride in India's digital inclusiveness. We, too, are happy with the fruits of our efforts to foster connectivity. With our very tech-savvy population, China has become the home of the Internet – boasting the biggest number of users and highest traffic. Our growing urban population, and a large part of our rural population, have broadband access – although admittedly our degree of penetration does not yet equal that

<sup>4</sup> See box page 58: Cosmos



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## The Surge of a Parallel World: Cosmos

Dragonboat, 20 October 2015

Some banks in China thought they were guaranteed eternal security. They were in for a rude shock with the launch of Cosmos in early 2012, a new generation virtual world that is hard to differentiate from real life. Cosmos began as a world of entertainment parks and shopping malls where Chinese could spend hours and hours – the brainchild of Chinese consortium of independent media, entertainment, Internet, and banking companies, each capitalizing on what they did best.

Cosmos removed cumbersome individual payments for functional and aesthetic reasons. Under this innovative scheme, customers settled all transactions by receiving an invoice upon exiting the world for usage and costs incurred. Of course, users could track transactions and set caps to avoid overspending.

To enter this microcosm participants had to open an account at Cosmos Bank and designate it as their core cash flow account for salary payments – in real life; for those under 18, a parental approval was required.

Cosmos Bank expanded its market share exponentially. After only six months, it had 25 million consumers who on average spent 2.5 hours and US\$ 15.8 per day – just calculate how much Cosmos Bank could make even with its modest 0.5% commission on settlements! People in less developed regions increasingly used Cosmos as an alternative source of income, selling virtual products and services, thus adding to its popularity.

Many established Chinese banks have yet to recover from the blow inflicted by Cosmos, but they have learned their lesson and are striving to be at the forefront of the development of second-generation Cosmos equivalents. Will they succeed?

<< **October 2015** >>

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of the Koreans.

We are especially proud to have created a truly collaborative Web, supported by our expertise in large-scale grid and utility computing, to maximize computing power. The collaborative Web was an optimal solution for China, especially as we needed to harness a vast pool of talent among our many young tech-savvy people. For example, rather than following a formal project development procedure involving a group of IT specialists, we were able to use the collaborative Web to invite contributions from interested individuals.

Allow me to highlight one achievement in financial services of which we are particularly proud, one that emerged as a result of this connectivity and demonstrates our ability to innovate – the launch of Cosmos in 2012<sup>4</sup>. You may recall that Cosmos was the first virtual, three-dimensional digital mall offering fully secure financial services for retailers and consumers. It was initially a payment solution but evolved to include financing and cash management. It was designed to be aesthetically appealing to China's youthful population, and in its first six months it attracted 25 million consumers. Cosmos is now a dominant player in China and its success has spilled over into our real lives, as many today make a living by trading in this virtual world.



At the same time, the rise in our numbers of high-net-worth individuals has led to a number of pioneering services in wealth management, including a Web-based one-stop shop which allows users to view and manage their full portfolio over all categories of assets, including funds, derivatives and property. Chinese wealth management solutions have quickly come to rival India's as the most technologically sophisticated in the world.

To conclude, we can – as can you – justly be confident that if the world is indeed tentatively re-connecting with the ideals of globalization, then both of our countries will have much more to look forward to than to fear with the reopening our financial services industry.

### **Jochen Zimmer, Chief Executive Officer, Germania Bank**

For those who don't know us, Germania is a prestigious German bank with operations in the United States and Latin America.

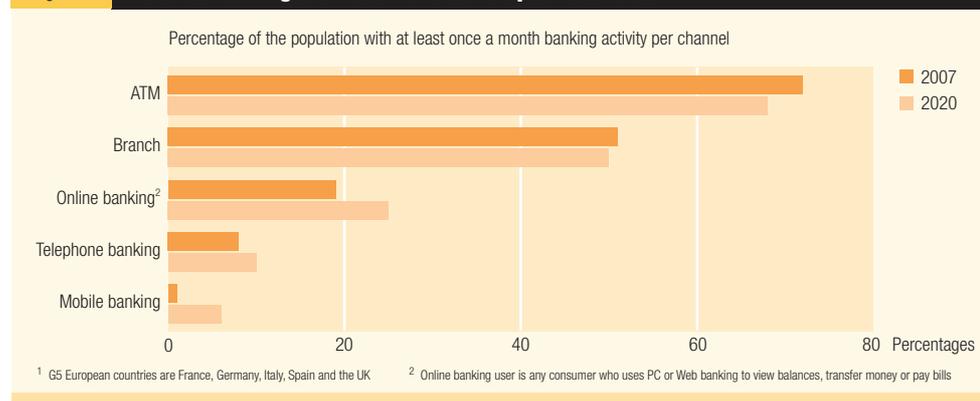
Before the globalization slowdown, we at Germania focused on building global, highly

efficient banking platforms which were capable of handling end-to-end transactions smoothly, securely and efficiently. We led the field with scaleable, modular solutions that could serve different kinds of banking institutions, and, very importantly, that had tremendous potential to reduce transaction costs for ourselves and other banks.

But this potential was never fully realized: the rise of trade barriers meant we had to scale back our global operations and reduce our expansion in both developed and emerging markets. We had to make tough choices; the loss of scale meant that returns from further investment in open architecture were not commensurate with costs. That forced us to rethink our priorities: we refocused on our customer offerings and reduced investment in operational excellence.

China, India and other markets at the time remained very enticing opportunities, but we could not take advantage of them for a number of reasons: unfavourable regulations towards foreign players, the challenges of adapting our business models to the local needs, and having to deal with competitive pressure from innovative

**Figure 5.5 Preferred Banking Channels in the G5 European Countries<sup>1</sup>**





Together these elements represented a strategy to capture the largest possible share of wallet in our local markets. And it worked. Our share has doubled over the last 10 years.

In our constant search for new sources of revenue, we have also forged a number of alliances and joint ventures. One example is our payments processing service for [betgain.de](http://betgain.de) and [expedia.fr](http://expedia.fr). Those deals help us make effective use of excess capacity in our back-office systems. Another is the work we've done with the Ministry of Finance to help streamline its processes for tax collection and pension payments.

Despite our best efforts, we are not as efficient as our counterparts in the US. This is partly due to differences in labour regulations, but we have also been hampered by the initial failure of public officials to implement regional standardization schemes such as the Single Euro Payments Area (SEPA). Still, improving efficiency is firmly on our agenda. At the same time we are aggressively trying to increase revenues through a relentless search for new distribution and sales channels and products. With that in mind, it has been highly interesting for me to take part in the judging of the innovative solutions we are celebrating tonight.

### ***Anyango Selim, UN Undersecretary General for Financial Inclusion***

Listening to the speakers, I have been struck by what could have happened differently in the last 14 years had globalization not stalled. In particular, the various innovations that we heard about today could have spread more rapidly if they had not been constrained by the need to respond to specifically local conditions. With greater global trade in technology and ideas, the kind of models we are honouring tonight could have been picked up around the world more readily. Global scale and cross-border transfers could have led to more specialization and the development of whole ecosystems of niche providers of financial services. We might have seen banks selling off divisions and farming out their back-office functions. Instead they have remained fairly integrated institutions.

My distinguished friend Mr. Zimmer is right when he says that most established banks are doing fine. But I continue to believe that the financial services industry could be doing a much better job serving citizens all over the world. Tonight's ceremony offers us a glimpse of the future that could have been, and the technologies that may still expand consumer choice and access around the world – if we can work together to create the conditions for them to do so.

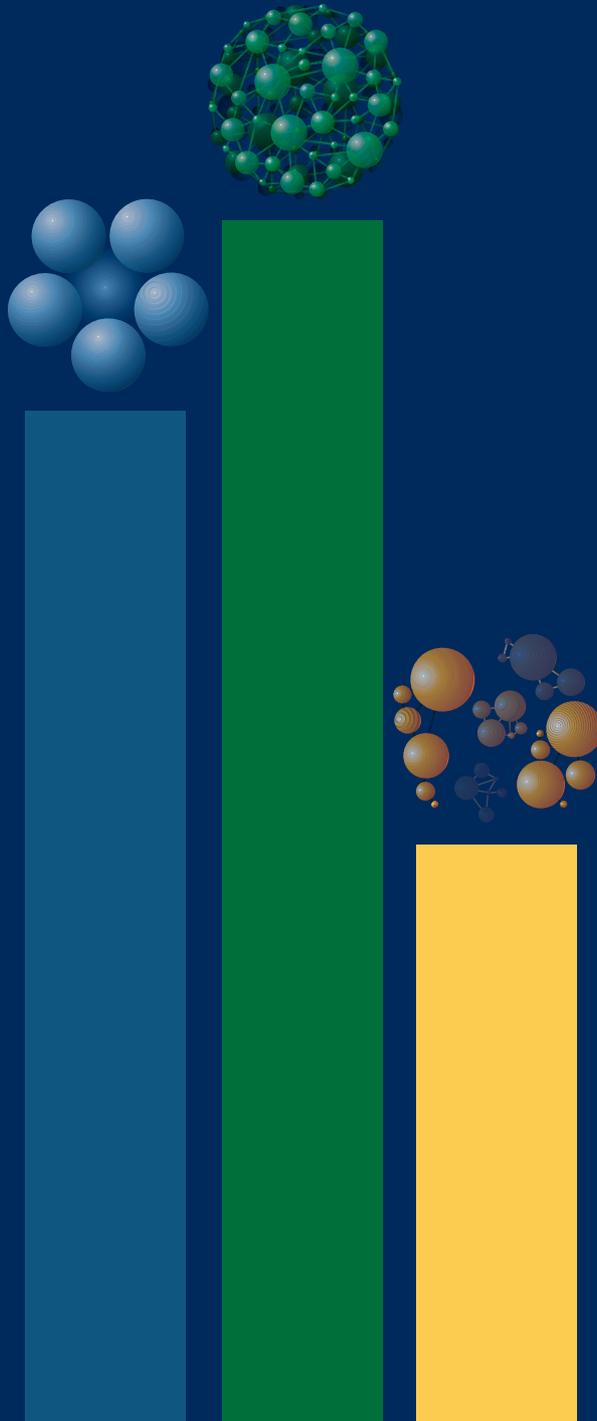
We must hope that the best ideas we are celebrating tonight will be exported far and wide from the islands of innovation this room represents.



Section

# 6

## Comparing the Three Scenarios



## Section

## 6

## Comparing the Three Scenarios

This section provides an overview of how selected indicators may evolve over time in each scenario. It also provides a comparison across the three scenarios of critical uncertainties, key innovations and business operating models in financial services. The underlying analysis has been developed on the basis of inputs from industry experts as well as macroeconomic modelling.

The comparative analysis of the three scenarios focuses on the following indicators:

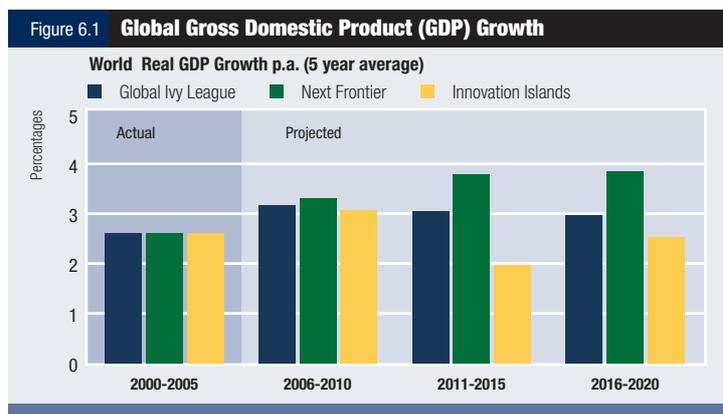
- 1. World economic growth**
- 2. World exports**
- 3. Global growth of financial services**
- 4. Evolution of critical uncertainties for the future of financial services**
- 5. Un-banked population**
- 6. Leading operating models in financial services and supporting technology**

### Using the data

Users need to bear in mind that the scenarios and the related analysis are descriptions of only a set of possible futures as seen from today's perspective. They should not be seen as predictions or forecasts, but rather as indicative projections for each scenario. Hence the data provided serves only as a guide and should be used judiciously.

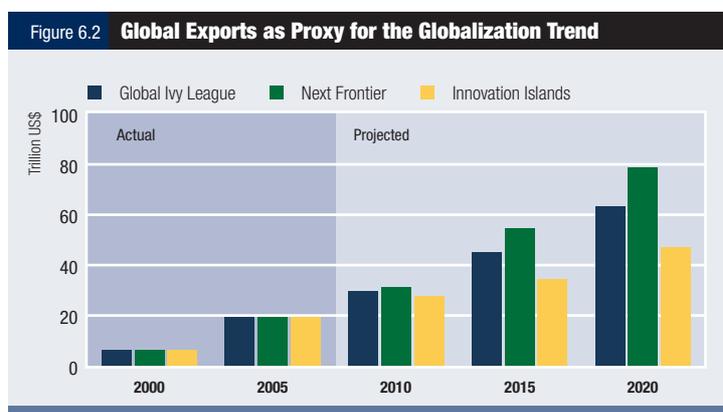
## 1. World economic growth

In **Next Frontier**, the global economy benefits from increasing globalization and trade in a harmonious global environment and reaches average growth rates of up to 4%. In contrast, in **Innovation Islands**, international tensions lead to protectionist measures which slow down the world's economic growth in 2011-2015. In **Global Ivy League**, although global integration progresses, security concerns and high uncertainty lead to political caution and less open societies preventing the global economy from reaching the full benefits of globalization.



## 2. World exports

World trade as represented by exports will grow considerably in two of the three alternative futures reflecting significant advances in globalization. In **Next Frontier**, global exports grow the most, followed by **Global Ivy League**. A protectionist backlash in **Innovation Islands** reduces the growth rate considerably especially in the period 2010 to 2015.



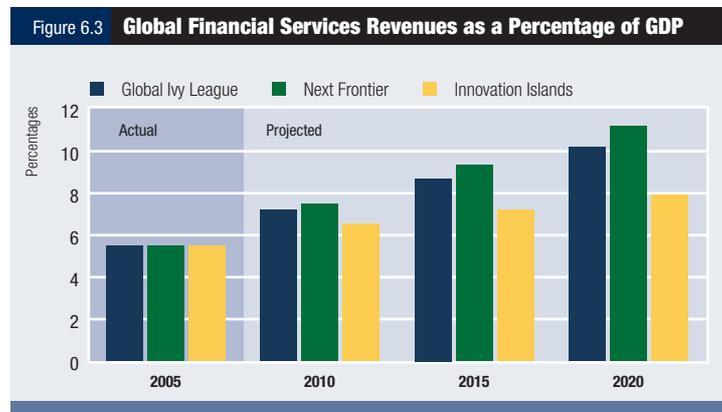
### 3. Global growth of financial services

All three scenarios expect a growth of the financial services industry in the period 2007-2010. This is mainly due to macroeconomic growth and partly due to innovation and optimization in the financial services industry. Macroeconomic growth will lead to strong growth of the financial services industry in the BRIC countries (e.g. the strong growth of the affluent middle class), but will also increase the demand for financial services in developed markets such as Europe and the US. The general trend governing demand for financial services is that a country's consumption of financial services grows as its relative wealth increases.

Clearly, various segments of the financial services industry will grow at different rates. Products whose appeal is tightly linked to wealth creation will grow faster than average, and the strongest growth will be in health insurance, retail banking and asset management. By contrast, wholesale banking will likely see the slowest growth, with weak growth in property and casualty insurance.

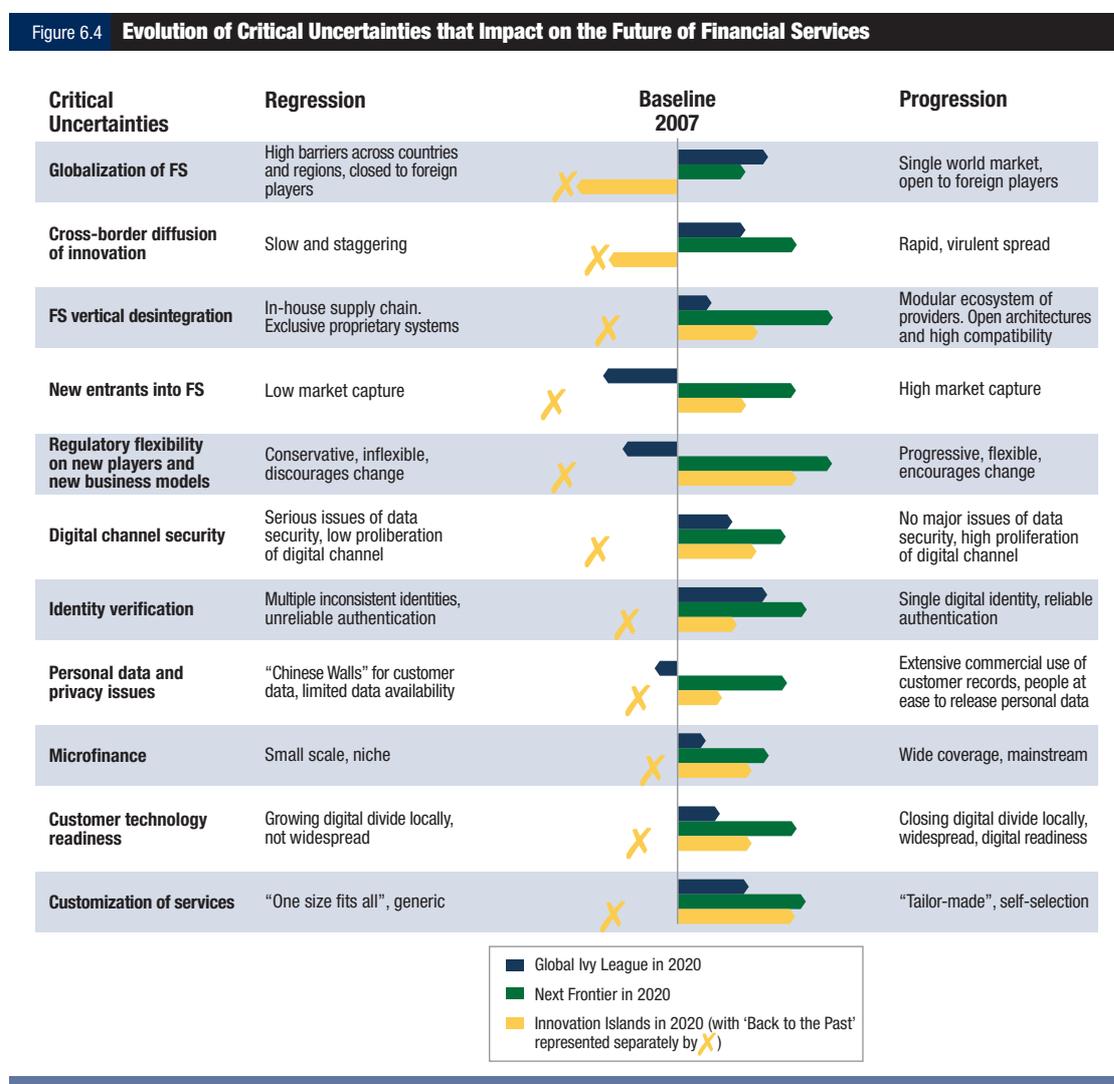
<sup>1</sup> Financial services revenues cover retail and wholesale banking as well as asset management, investment banking and insurance

In **Next Frontier**, global financial services revenues<sup>1</sup> as a share of global gross domestic product (GDP) is high, reaching roughly 11% in 2020 from 5.5% in 2005. This is due to factors such as high economic growth, strong wealth creation and broad access to financial services. These volume growth effects outpace the margin pressures due to increased competition. In contrast, **Innovation Islands** ends up with the lowest share of roughly 8% - this result is mostly affected by the increase in global protectionism and general stagnation in many regions despite isolated islands of fast growth in emerging markets. Finally, in **Global Ivy League**, financial services represent roughly 10% of global GDP in 2020.



#### 4. Evolution of critical uncertainties for the future of financial services

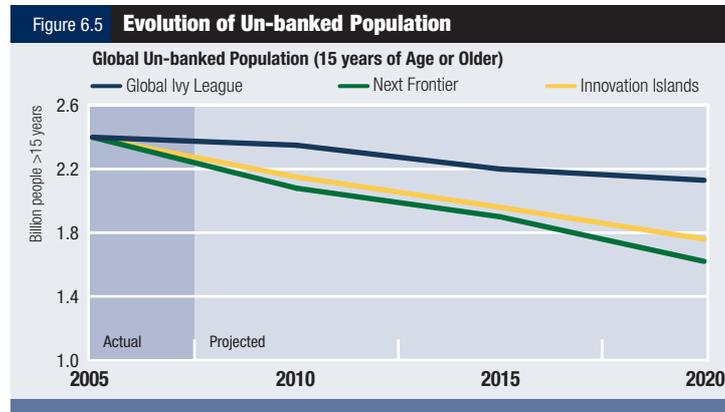
The chart below compares how the critical uncertainties for the future of financial services evolve in the three scenarios between 2007 and 2020.



<sup>2</sup> An un-banked is defined as any individual of 15 years of age or older who does not have a saving or deposit account nor access to loans in a commercial bank or any alternative financial institution (AFI) such as state owned agricultural, development and postal banks, member-owned savings and loan institutions, other savings banks, low-capital local and rural banks, and specialized microfinance institutions.

## 5. Un-banked<sup>2</sup> population

In *Innovation Islands*, the local and regional focus increases the emphasis on domestic markets and local demand to achieve growth and development. To that end, the increase of access to financial services for the un-banked was one of the key objectives in emerging markets like India and China. Technology and innovation are used to provide access to financial services for the un-banked at affordable costs. This scenario reflects the likely reduction of the number of un-banked people globally. In the *Next Frontier*, access to financial services may even be higher due to a broader spread of innovation and stronger support from the international business community (e.g. international IT, telecom and financial services providers) to make digital and financial inclusion a reality. In *Global Ivy League*, seizing the market for the “next billion customers” in developing markets is not the first priority; hence the reduction in the un-banked population remains modest compared to the other two scenarios

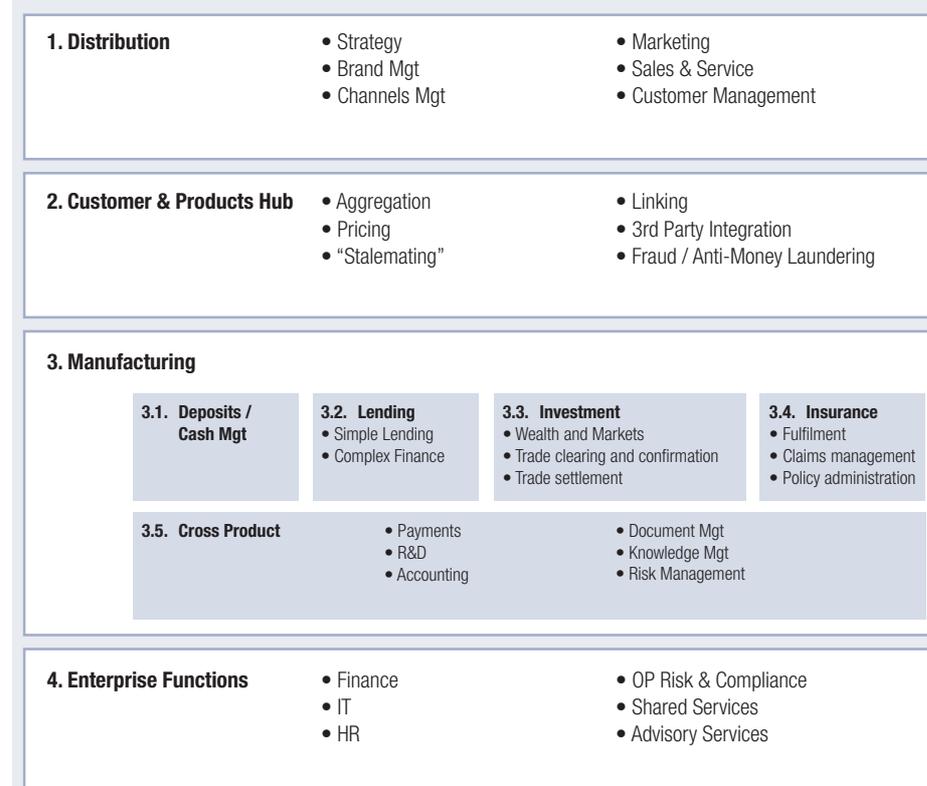


## 6. Leading operating models in financial services and supporting technology

### Definition of an operating model

An operating model is a summary of how the business operates. It presents a holistic view of the key business components. Business component is a view on a selected section of an enterprise that includes resources, people, technology and the know-how necessary to deliver value. The model pictured below is an outline of an illustrative operating model for a bank. Specific operating models could be defined for each sector within the financial services industry such as retail banking, wholesale banking, asset management, insurance, investment banking and trading.

Figure 6.6.a **Business Operating Model Outline for a Financial Service Provider**



1. Distribution – business components related to managing the access to market: marketing, branding and sales of products as well as sales channel management
2. Customer Hub – business components related to managing customer base and product portfolio
3. Manufacturing – business components related to transaction processing for all products sold by the bank, e.g., lending, payments and deposit management
4. Enterprise Functions – support functions such as human resources, risk, compliance and finance

There are six key potential operating models that emerge from the scenarios, depending on the level of globalization and the degree of disintegration of the value chain in financial services

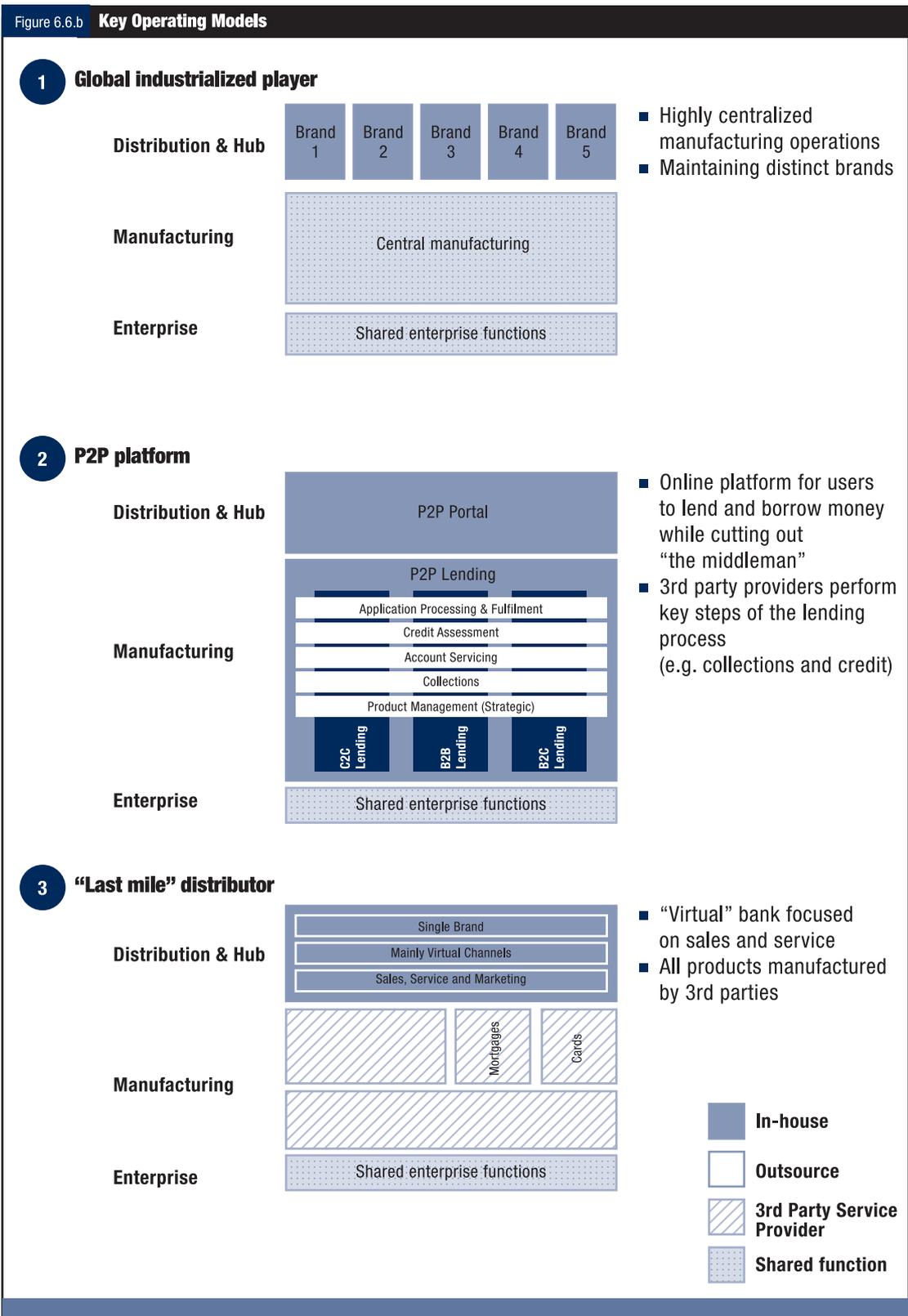
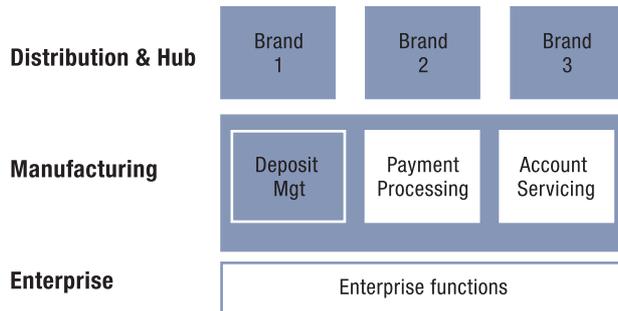


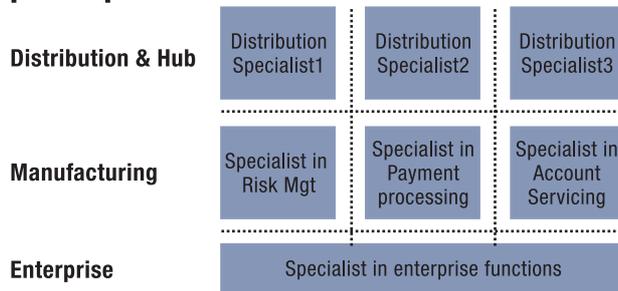
Figure 6.6.b Key Operating Models (continued)

**4 “Light” global FS provider**



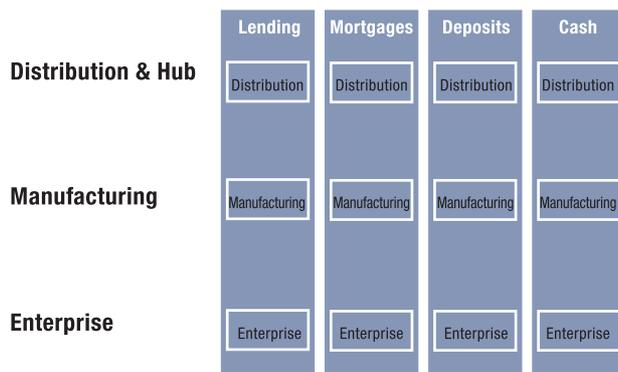
- Focus on the business components in which the provider has a competitive advantage
- Source remaining functions from third-parties (FS and non-FS)

**5 Component specialist**

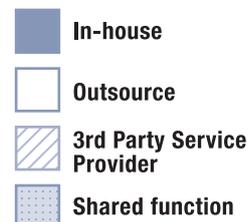


- Value chain split among a large number of players
- Each provider focuses on one or a few functions (e.g. risk management)

**6 “Siloed” product specialist**



- No shared platforms to enable simplification leading to duplication of activities
- All operations are owned in-house



Depending on the scenario, distribution, manufacturing and enterprise activities can be configured differently. In **Global Ivy League**, an industrialized operating model is the dominant model. In the other two scenarios, due to the vertical disintegration of the value chain, a greater variety of operating models with many specialized players emerged.

Table 6.1 Operating Model Characteristics per Scenario			
	Global Ivy League	Next Frontier	Innovation Islands
Relevant model (see figure 6.6.b)	<ul style="list-style-type: none"> <li>• 1</li> </ul>	<ul style="list-style-type: none"> <li>• 2, 3, 4, 5</li> </ul>	<ul style="list-style-type: none"> <li>• “Leapfrogging”: 2, 3, 4, 5</li> <li>• “Business as usual”: 1 (with partially centralized manufacturing and single brand)</li> <li>• “Back to the past”: 6</li> </ul>
Geographic coverage	<ul style="list-style-type: none"> <li>• Global</li> </ul>	<ul style="list-style-type: none"> <li>• Global, regional and local</li> </ul>	<ul style="list-style-type: none"> <li>• Local and regional</li> </ul>
Distribution and Customer and Product Hub	<ul style="list-style-type: none"> <li>• Multi-brand model</li> <li>• Each brand can be accessed by customers via a variety of channels (branch, telephone, Internet)</li> <li>• Customized propositions</li> <li>• Product bundling – improved cross-selling</li> <li>• Distribution fully retained in-house</li> </ul>	<ul style="list-style-type: none"> <li>• Value chain disintegrated between specialized FS and non-FS players globally</li> <li>• Customers are open to innovative virtual distribution channels and networks</li> <li>• Far reaching customization of value propositions</li> <li>• Complex investment advice available</li> </ul>	<p>“Leapfrogging”</p> <ul style="list-style-type: none"> <li>• Value chain disintegrated on the local level – new distribution specialists emerge locally</li> <li>• New sales channels and products tailored to local cultures and needs</li> </ul> <p>“Business as usual”</p> <ul style="list-style-type: none"> <li>• Product simplification and mass customization to local needs</li> <li>• Effective cross-selling</li> </ul> <p>“Back to the past”</p> <ul style="list-style-type: none"> <li>• Distribution vertically organized along product lines</li> </ul>
Manufacturing	<ul style="list-style-type: none"> <li>• Central, industrialized manufacturing processes across all products and brands</li> <li>• Optimized sourcing strategies – centralize and offshore processing activities where scale advantages exist</li> </ul>	<ul style="list-style-type: none"> <li>• Value chain disintegrated between specialized service providers and FS players (e.g., credit decision-making specialists, risk management specialists)</li> </ul>	<p>“Leapfrogging”</p> <ul style="list-style-type: none"> <li>• Disintegration of manufacturing value chain among outsourcing specialists</li> </ul> <p>“Business as usual”</p> <ul style="list-style-type: none"> <li>• Some limited centralization of manufacturing and processing activities, yet few new investments in that area</li> </ul> <p>“Back to the past”</p> <ul style="list-style-type: none"> <li>• Manufacturing vertically organized along product lines</li> </ul>
Enterprise Functions	<ul style="list-style-type: none"> <li>• Integrated suite of enterprise functions shared across business units</li> <li>• Outsourced where cost advantages exist</li> </ul>	<ul style="list-style-type: none"> <li>• Enterprise functions shared across business units</li> <li>• Outsourced to specialized providers</li> </ul>	<p>“Leapfrogging”</p> <ul style="list-style-type: none"> <li>• Outsourced to specialized providers</li> </ul> <p>“Business as usual”</p> <ul style="list-style-type: none"> <li>• Shared enterprise functions retained in-house</li> </ul> <p>“Back to the past”</p> <ul style="list-style-type: none"> <li>• Enterprise functions are not integrated and are kept in-house</li> </ul>

The different characteristics of the operating models call for different technology requirements. Some of those requirements can be met by technologies available today. However, for each scenario to function, more advanced technologies need to be adopted by financial institutions.

Table 6.2 **Technology Required to Support the Operating Models**

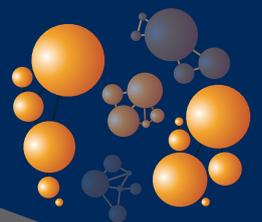
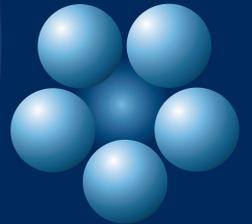
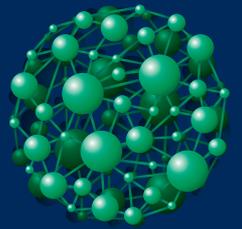
	Operating Model Requirements for Technology	Technology Available Today	Technology with Scope for Further Development / Uptake
<b>Global Ivy League</b>	<ul style="list-style-type: none"> <li>Common IT architecture &amp; IT systems</li> <li>Global standards for core processes</li> <li>Optimised global sourcing of IT</li> <li>Global compliance management</li> <li>Global transparency</li> <li>Enterprise – wide libraries of data (single version of the truth)</li> <li>Advanced data analytics and product customization</li> <li>Effective security / identity crisis management solutions</li> <li>Advanced bank branches</li> <li>Ease of technical integration of acquisitions</li> </ul>	<ul style="list-style-type: none"> <li>SOA</li> <li>Data warehousing</li> <li>Enterprise data management</li> <li>Customer analytics</li> <li>Retail and B2B security solutions (some adoption of biometrics, security tokens)</li> <li>Grid computing and virtualisation</li> <li>Business rule engines</li> <li>Algorithmic trading</li> <li>Network identity management</li> <li>Radio Frequency Identification (RFID) for customer recognition</li> <li>Speech and touch-based customer interfaces</li> <li>Footfall analysis</li> <li>IP services in bank branches</li> <li>Product configurator / development tools</li> <li>Business rule engines</li> </ul>	<ul style="list-style-type: none"> <li>Real-time dynamic databases</li> <li>Business Process Management (BPM) in back office operations</li> <li>Advanced dynamic relationship pricing models</li> <li>Converged payment clearing and settlement</li> <li>Centralized payment management</li> <li>Contactless retail payment</li> <li>Advanced identity management tools</li> <li>Advanced fraud detections and analysis technologies</li> <li>Front office loan and mortgage BPM</li> <li>Advanced handheld devices in branches</li> <li>Telemetric</li> <li>Seamless connectivity between trading environments</li> <li>B2B web services</li> </ul>
<b>Next Frontier</b>	<ul style="list-style-type: none"> <li>Large scale back office business process automation</li> <li>Multiple, integrated channels to consumer</li> <li>Effective networking and connectivity between numerous service providers and partners</li> <li>Significant product customization capabilities</li> <li>Support innovative business models and distribution channels globally</li> <li>Clear ownership of fragmented data</li> <li>Aggregation of specific categories of data (e.g., credit scoring, identity)</li> <li>Fast processing of dynamic data</li> <li>Complex search queries</li> <li>Effective security / identity management solutions</li> <li>Advanced payment options</li> </ul>	<ul style="list-style-type: none"> <li>SOA</li> <li>Web-based exchange platforms and distribution channels (e.g., Zopa &amp; Prosper)</li> <li>Data analytics and customer profiling</li> <li>Regionally centralized data aggregation technologies</li> <li>Collaborative web</li> <li>Retail and B2B security solutions</li> <li>Remote deposit and payment capture</li> <li>Secure messaging for personal and corporate financial information (IFX)</li> <li>Core banking systems (in-a-box)</li> <li>Customer based, automated credit scoring</li> <li>Contactless retail payment (e.g., mobile phone)</li> <li>Cross-border contactless payments (e.g., GSM payment service)</li> <li>Online micro payment</li> </ul>	<ul style="list-style-type: none"> <li>Advanced fraud detections and analysis technologies</li> <li>Advanced B2B and C2C security solutions (e.g., quantum cryptography, advanced fraud detection, biometrics)</li> <li>Multi-factor authentication involving biometrics, video and voice</li> <li>Front office loan and mortgage BPM</li> <li>Payment gateways</li> <li>Complex search (semantic) and Intelligent Agents</li> <li>Federated identity networks</li> <li>Real time analytics, profiling and detection</li> <li>Quantum computing</li> <li>Geographical information systems</li> <li>Standards across pre-trade, trade and post trade (e.g., ISO 20022)</li> </ul>
<b>Innovation Islands</b>	<p><i>(Similar to Next Frontier – with many local differences, and less opportunity for global scalability)</i></p> <ul style="list-style-type: none"> <li>Support new business models and channels on a local level</li> <li>Low run cost of applications</li> <li>Enable easy access to financial services for the poor</li> <li>New products and services for underserved populations</li> <li>Aggregation of specific categories of data (e.g., credit scoring)</li> <li>Security solutions to resolve fraud and corruption issues</li> <li>Enablement of mobile phone as channel</li> <li>Delivery of multiple retail products, e.g., insurance via single channel (Universal Banking)</li> </ul>	<p><i>(Similar to Next Frontier – with more local implementation and culturally different usage of channels)</i></p> <ul style="list-style-type: none"> <li>Scaleable manufacturing engines</li> <li>Speech and touch-based customer interfaces</li> <li>Biometric authentication</li> <li>Retail and B2B security solutions</li> <li>Contactless payment technologies</li> <li>Regionally centralized data aggregation technologies</li> <li>Core banking systems (in-a-box)</li> <li>Wireless connectivity technologies</li> </ul>	<p><i>(Similar to Next Frontier – greater development of local solutions. Most advances are in technologies which give greater access to FS)</i></p> <ul style="list-style-type: none"> <li>Integrated face-to-face channel solutions</li> <li>Advanced handheld mobile devices (e.g., points of sales)</li> <li>Low cost point of sale devices</li> <li>Wireless ATM devices</li> <li>Integrated contactless payment tools across ticketing, phone payment, retail, etc</li> <li>Local market data services for regional and rural markets</li> </ul>



Section

# 7

## Conclusion



## Section

## 7

## Conclusion

Uncertainty is a source of opportunity. It is also what makes the future interesting. Clarity of awareness of three distinct, plausible future worlds may not help to reduce uncertainty about the direction of the financial services industry – but it is our hope that reading these scenarios will have equipped decision-makers to face that uncertainty with greater knowledge and understanding.

These scenarios are not predictions. Rather, their aim has been to raise awareness of underlying issues, heighten sensitivity to early signals of emerging trends, and paint a broad picture of multi-dimensional challenges in which current strategies can be located. After reading these scenarios, a decision-maker in business could consider the following questions:

- How can I translate insights from these scenarios into business strategies?
- What would be the risks for my company as each future world unfolds?
- How can I ensure that my company's strategy is robust and flexible enough to promise sustainable profitability even in the less attractive worlds?
- Which areas of innovation should become the priorities in my company? Is incremental innovation sufficient or is fundamental innovation required?
- In which areas can my company create sustainable competitive advantages? Which areas present the most threat from new players or most opportunity to challenge incumbent players? Who are my potential partners and competitors?

Not only businesses but governments and international organizations have a crucial role to play in shaping the future of the financial services industry. Decision-makers in these realms, too, can use these scenarios to reflect on which future world seems most propitious and which policies they could adopt to nudge the existing world in their preferred direction.

While much is uncertain, what is certain is that decisions made today will determine how financial services evolve tomorrow. We hope that these scenarios have contributed to forming a common understanding and basis for dialogue that can play a role in shaping the industry's future for the better.

## Annex 1: Additional Material

We provide in this annex the following additional material:

1. Long list of key drivers for the future of Financial Services
2. Innovations in Financial Services

### 1. Long list of key drivers for the future of financial services

The following table lists the 68 drivers that were identified as key for the future of innovation in financial services.

Customer	Business	35. Share of Wallet	Government
1. Longevity	18. Globalization		36. Regulatory Response to New Business Models
2. Migration	19. Industry Concentration		37. Rising Cost of Compliance
3. Urbanization	20. New Entrants into FS (Large Non-FS Players)		38. Local Markets Opening Up
4. Corporations Gravity Centre	21. New Entrants into FS (Niche Players)		39. FS Interconnection Protocols and Standards
5. Wealth	22. Vertical Disintegration		40. Internet Regulation and Standards
6. Technology Readiness	23. Industry Collaboration		41. IT/TC Standards and Regulations
7. Government As Customer	24. Legacy Systems		42. Anti-Money-Laundering
8. Decline of Cash	25. Leapfrogging		43. Defence Against Terrorism
9. Power Shifts (Gender And Inter-Generational)	26. Organizational Constraints		44. Taxation
10. Virtual Life	27. Revenue vs Cost Focus		45. Establishing Identity
11. More Demanding Customer	28. Security Concerns		46. Drive for New Technologies and Digital Inclusion
12. Digitally Comfortable	29. Diffusion of Successful Innovations		47. Investment in Physical Infrastructure
13. Do-It-Yourself Trend	30. Innovation Drive of Non-Banks		48. Mandated Provision
14. Data Security versus Privacy	31. Harnessing Data		
15. Convenience versus Security	32. Security Infrastructure		
16. Consumer Education Around Security	33. Talent		
17. Consumer Trust	34. Time to Market		

## 2. Innovations in financial services

The table below lists the key innovations in financial services and provides short definitions.

Table A1.2 <b>Impact of Innovations on Financial Services</b>	
<b>Innovation</b>	<b>Short description</b>
<b>INNOVATIONS IN PAYMENTS</b>	
	Smart Cards
A plastic card containing a computer chip that	can store electronic "money".
Digital Cash / e-Currencies	Payment for goods or services by transmitting a signal between computers.
Electronic Wallet (e-Wallet)	Software storing information (passwords, payment details) necessary for e-commerce transactions.
Converged Payment Clearing and Settlement	
Merging and rationalization of clearing and settlement systems into a single process using	common information standards, irrespective of payment type but likely limited by geography. Converged Payment Execution
	Gateway for centralized payment management. Provides a common set of services and
operational functionality across payment types.	Payments Value Add Services
Data-rich services created via the reutilization of	payment data and its integration with existing customer profiles and relationships. Can be used
to offer merchants more hindsight into their	customers' shopping habits.
Mobile Payments	Electronic payments via mobile phone, both between individuals and to merchants.
<b>INNOVATIONS IN DISTRIBUTION AND ACCESS DEVICES</b>	
<b>INNOVATIONS IN IDENTITY MANAGEMENT</b>	
Federated Identity Networks	
A group of enterprises allowing consumers to	access all their services using the same identity credentials.
User-centric Identity	System allowing users to choose which identity credentials to present in response to each request.
Quantum Cryptography	Complex, tamper-proof authentication mechanism harnessing the quantum behaviour of photons.
Biometric Identity Recognition	Identity recognition through recognition of, for example, body geometry, iris or voice.
Intelligent Agents Sophisticated software that will be able to provide intelligent, highly personalized financial	advice. Spatial Tracking
Camera system that increases branch efficiency	by tracking movements of customers and employees and enabling footfall analysis.
Virtual Experts	

<b>Table A1.2 Impact of Innovations on Financial Services (continued)</b>	
<b>Innovation</b>	<b>Short description</b>
	Deposit ATMs
	ATMs that allow the deposit of bank notes without an envelope, or the scanning and
acceptance of paper checks with immediate	confirmation.
<b>INNOVATIONS IN MANUFACTURING AND PROCESSING</b>	
Business Process Management for Branch	Front-office Applications
Structured approach employing methods,	policies, metrics, management practices and software tools to manage and continuously
optimize branch activities and processes.	Cyber-reality
Online bank branches and distribution channels	in virtual worlds (e.g. Cosmos, SecondLife).
Modular Core Banking Systems	
Architecture using “Lego-like” blocks offers	greater flexibility and scalability than traditional architecture. Enabled by SOA technology.
Single Payments Platforms and Systems	
Integrated platforms enabling unified consumer	and business payments processing across geographical borders (e.g., SEPA).
Business Rule Engines	
Software tool used to record, track, manage	and revise enterprise business processes based on their set rules.
Automated Underwriting Tools	Used by life insurers that want to automate underwriting decisions for simple types of cases and focus their underwriters to focus on complex cases.
Dynamic Relationship Pricing Tools	
Tools used to model account scenarios and	dynamically bundle and price products and services for customers using variables such as
segment, profitability and risk.	Product Configurators
	Software that supports insurance product development activities, including pricing, product
modelling and testing, to improve product’s	speed to market.
New Business Application Service Providers	
Standardized user interface for new business	submission for manufacturers that sell products through multiple life insurers.
Pharmaceutical Databases	

## Annex 2: Recommended Reading

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