

# Strategies for Innovation in the Japanese Banking Industry

by

**Yasushi Iguchi**

B.A., Economics, Keio University (1992)

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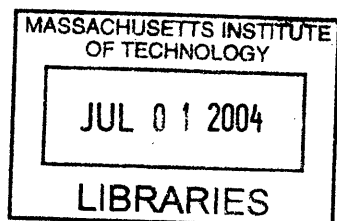
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Signature of author \_\_\_\_\_  
MIT Sloan School of Management  
May 7, 2004

Certified by \_\_\_\_\_  
Michael A. Cusumano  
Sloan Management Review Professor of Management  
Thesis Supervisor

Accepted by \_\_\_\_\_  
David A. Weber  
Director, Management of Technology Program



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## **ABSTRACT**

In this study, I identify and discuss innovation strategies for the Japanese banking industry, with special focus on the R&D process through which banks are seeking to create new e-business opportunities. Traditionally, it was thought to be difficult to undertake well-organized R&D activities in a service industry because the intangible nature of banking services made it difficult to conduct R&D in a typical laboratory setting. Therefore, many service firms did not organize formal R&D activities. Furthermore, Japanese banks faced environmental obstacles to innovation, including government regulations, non-performing loans, and legacy assets that were difficult to abandon, such as the backbone banking system supported by major mainframe architecture. Today, emerging Internet technologies are at last triggering R&D activities among Japanese banks, and they are achieving some success in this field.

This thesis identifies empirical R&D methods that have become more commonly used by Japanese banks, as well as the problems encountered in the effort to generate creative and effective ideas, screen them, perform trial-and-error iterations, and manage tests on real-life situations to gain customer input. I identify four factors that can help banks achieve innovation: managing institutional matters, managing legacy assets, acquiring a better understanding of customer needs, and organizing reality tests early to obtain feedback and make appropriate responses.

The thesis begins by introducing some formal, empirical R&D methods. Next, I describe the business and technology environment of the Japanese banking industry, and depict the difficult situations that hamper innovation in the industry. Then, I review various organizational issues facing R&D in banking, followed by an analysis of the actual R&D processes taken in actual cases undertaken by the Bank of Tokyo-Mitsubishi.

Thesis Supervisor: Michael A. Cusumano

Title: Sloan Management Review Professor of Management

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# CHAPTER 1

## Introduction

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In the late 1980s and into the 1990s, the emerging Internet technology began to skyrocket, and its white-hot success resulted in the so-called “dot.com” bubble. But when that bubble collapsed in the late 1990s, it had enormous impacts, both positive and negative, on every industry worldwide. For the banking industry in Japan, it was the first and most valuable experience of using innovation to create new business opportunities. Many Japanese banks established new R&D units as a “window on technology” and plotted their entry strategies into the new world of information technology; a few banks actually launched some e-business opportunities. However, the unanswered question is whether those R&D units provided products and services to customers in order to satisfy the customers’ needs or because the R&D units were leading the banks toward new innovations.

In my observation, there are three potential obstacles on the road to innovation for the Japanese banking industry:

1. Japanese banks may still be unfamiliar with use the newest technologies in their business. They have never really experienced a serious challenge because new entries into and out of the Japanese banking industry are highly regulated by the government.
2. The new R&D units, which seek to create new e-business opportunities and to bring innovations to the financial business, were organized separately from both the existing technology units and the marketing units. This separation caused difficulty when the banks tried to harmonize the new internet technology with their customer needs.
3. The R&D units of Japanese bank did not have broad authority to innovate their business or to develop entry strategies or allocating personnel and a budget.

Adding further complications to these three obstacles, Japanese banks did not develop innovations in their business.

With these issues in mind, the objective of this thesis is to analyze various strategies for innovation in the Japanese banking industry based on actual cases in which new e-business opportunities were developed by the banks' R&D units. These cases enabled me to identify innovations in the banking industry and to assess various strategic alternatives.

I have organized this thesis as follows. In Chapter 2, I introduce some empirical methods of R&D and point out key factors that must be managed to achieve successful R&D activities.

In Chapter 3, I analyze the business environment surrounding the Japanese banking industry and examine the factors that have discouraged banks from developing innovations in the banking business.

In Chapter 4, I discuss the past and current technology environment which has had a major impact on the R&D activities of Japanese banks. I also explain how these emerging Internet technologies triggered the banks' decision to enter into organized R&D.

Next, in Chapter 5, I describe the organizational issues facing banks R&D activities, both in Japan and in the U.S.

Following a review of Chapters 2 through 5, in Chapter 6, I present five actual R&D cases involving the Bank of Tokyo-Mitsubishi, and analyze the processes involved in each case, applying insights taken from my research in Chapter 2.

Finally, based on the outcomes of the projects, in Chapter 7, I suggest innovation strategies that the Japanese banking industry could consider.

## CHAPTER 2

### Literature Review of R&D Methodologies

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In this chapter, I present the results of my literature review, and introduce several R&D methodologies. In order to achieve innovation, a general overview of how to perform R&D activities is useful before analyzing R&D that is specific to the banking industry. I focus on three aspects of R&D performance: (1) generating new ideas and screening them, (2) understanding customers' needs, and (3) conducting trials to determine the utility and effectiveness of potential new innovations.

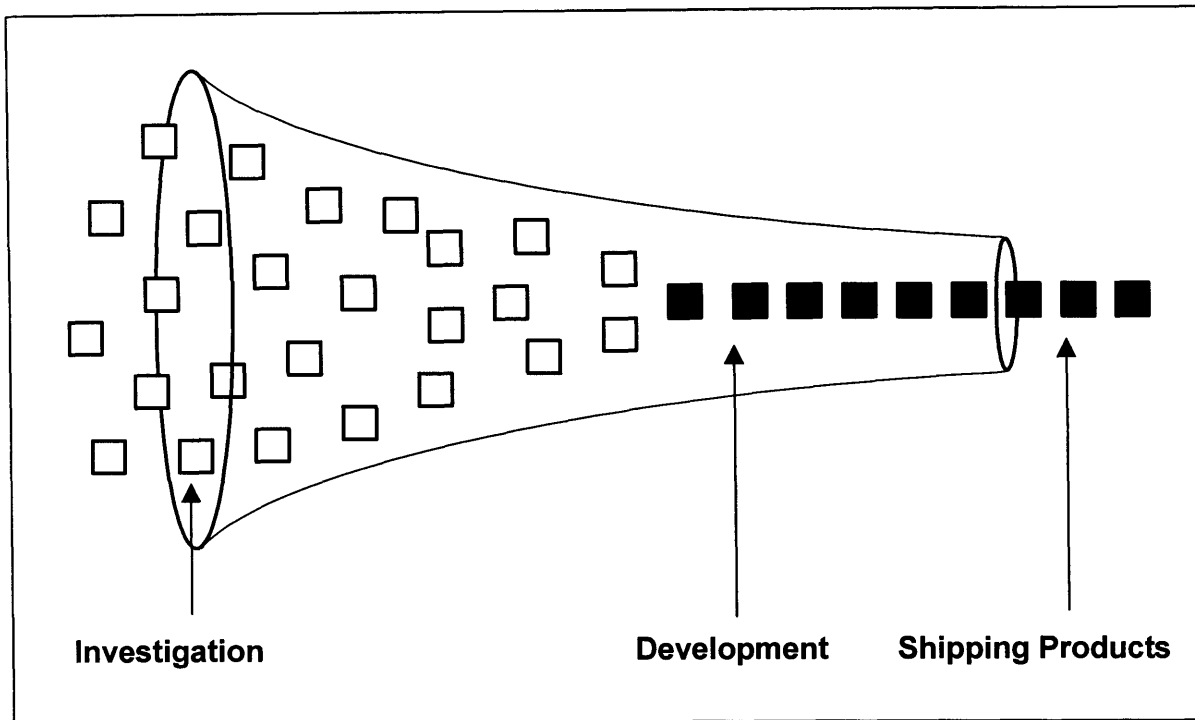
#### **2.1. Generating New Ideas and Screening**

##### **2.1.1. The Development Funnel**

The first step in R&D activities is to generate new ideas. After starting with broad range of possibilities, the list should be gradually refined and selections made. Wheelwright & Clark (1992) illustrated this concept in their "Development Funnel," which is shown in Figure 2-1. In its simplest form, the development funnel offers a graphical structure for thinking about the generation and screening of alternative development options, and combining some subset of these into a product concept. A variety of different product and process ideas enter the funnel for investigation, but only a fraction become part of a full-fledged development project. Those are examined carefully before entering the narrow neck of the funnel, where significant resources are expended to transform the selected ideas into a commercial product and process. The nature of the funnel is defined by the way an organization identifies, screens, reviews, and converges on the content of a development project as it moves from idea to reality. The funnel establishes the overall framework for development: the



generation and review of alternatives, the sequence of critical decisions, and the nature of decision making.



(Source: Wheelwright & Clark, 1992, p.112)

**Figure 2-1: The Development Funnel**

According to Wheelwright & Clark (1992), managing the development funnel involves three different tasks or challenges. The first is to widen the funnel's mouth. To be effective, the organization must expand its knowledge base and access to information in order to increase the number of new product and new process ideas.

The second challenge is to narrow the funnel's neck. After generating a variety of alternative concepts and ideas, management must screen them and focus resources on the most attractive opportunities. The authors note that the narrowing process must be based on a set of screening criteria that fit the company's technological opportunities while making effective use of its development resources in meeting strategic and financial needs. They point out that the goal is not just to apply limited resources to selected projects with the highest expected payoffs, but to create a portfolio of

projects that will meet the business objectives of the firm while enhancing the firm's strategic ability to carry out future projects.

The third challenge is to ensure that the selected projects deliver on the objectives that were anticipated when the project was originally approved.

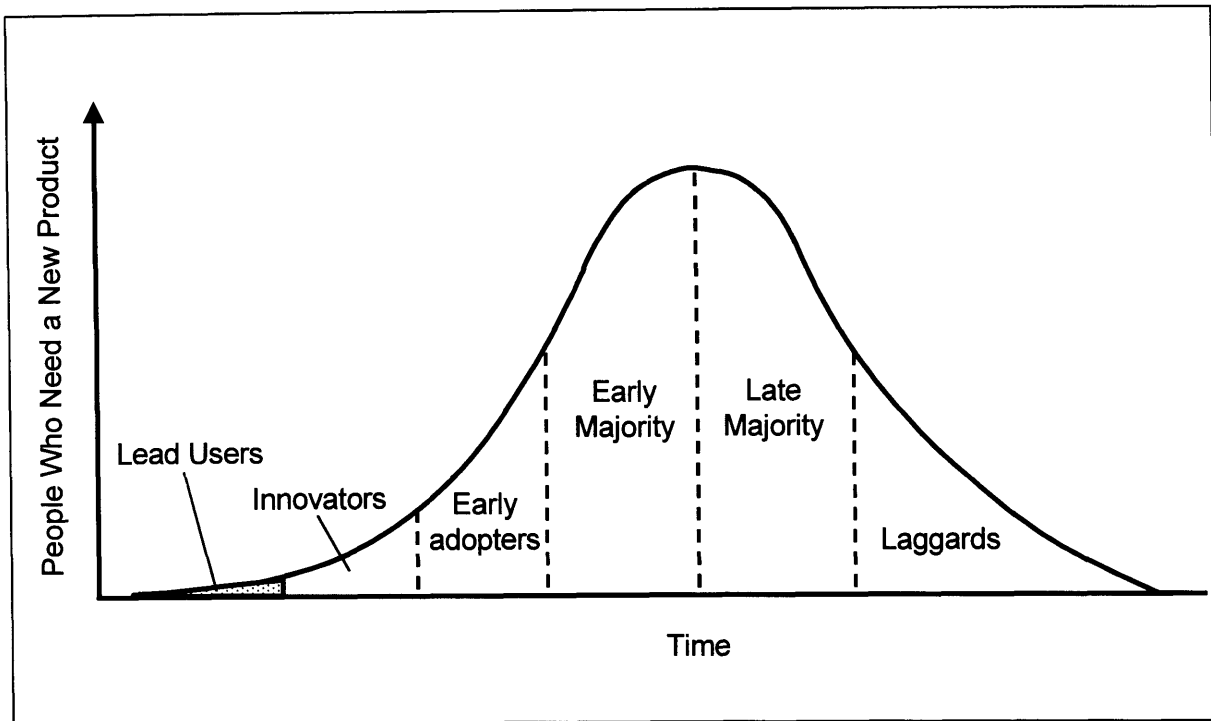
As Wheelwright and Clark depict in the development funnel, it is crucial to inject great ideas into R&D projects and to carefully screen them for creating innovative products. What ideas are required in R&D activities? And by what measures should those ideas be screened? The answers to those questions are traditionally summarized in one word: *Customer*.

## **2.2. Understanding Customer Needs**

In the mainstream manner of creating new products, listening to customer needs is typically central to the process. However, who has real customer needs and how to grasp them efficiently and effectively are also central issues in R&D activities. von Hippel (1988) and Thomke & von Hippel (2002) discussed those issues and proposed useful frameworks which are discussed in the following sections.

### **2.2.1. The Lead Users Approach**

von Hippel (1988) has identified several problems in marketing research where it is difficult to recognize current and real customer needs. Although marketing research can investigate what products most customers currently buy, those customer needs often change when new products are introduced, especially if considerable time was needed to develop them. Moreover, real customer needs are usually expressed through complaints about products, so it becomes more difficult to achieve innovations if researchers responded only to the attributes and feedback from current hot-selling products. Looking at these situations, von Hippel (1988) proposed the "Lead User" concept (see Figure 2-2), which strives to explain what real customer needs are.



(Source: von Hippel, Course 15.356, MIT Sloan School)

**Figure 2-2: The Lead User Concept**

According to von Hippel, lead users of a novel or enhanced product, process, or service can be defined by two characteristics:

- (1) Lead users represent needs that will be eventually generally found in a marketplace, but they have these needs months or years before the bulk of the marketplace encounters the same needs, and
- (2) Lead users are positioned to benefit significantly by obtaining a solution to those needs.

In short, lead users are users whose present strong needs become a general need in the marketplace sometime in the future. Since lead users become familiar much earlier with conditions that will be encountered by the general market in the future, they can serve as a needs-forecasting laboratory for marketing research. Moreover, since lead users often attempt to fill the need they are experiencing, they can provide valuable new product concept and design data to inquiring manufacturers, in addition to needs data.

Identifying and locating these lead users, listening to their needs information, and reflecting those needs in actual products is enormously helpful to the creation of new products that meet real customer needs and eventually lead to innovation.

### **2.2.2. Customers-as-Innovators Approach**

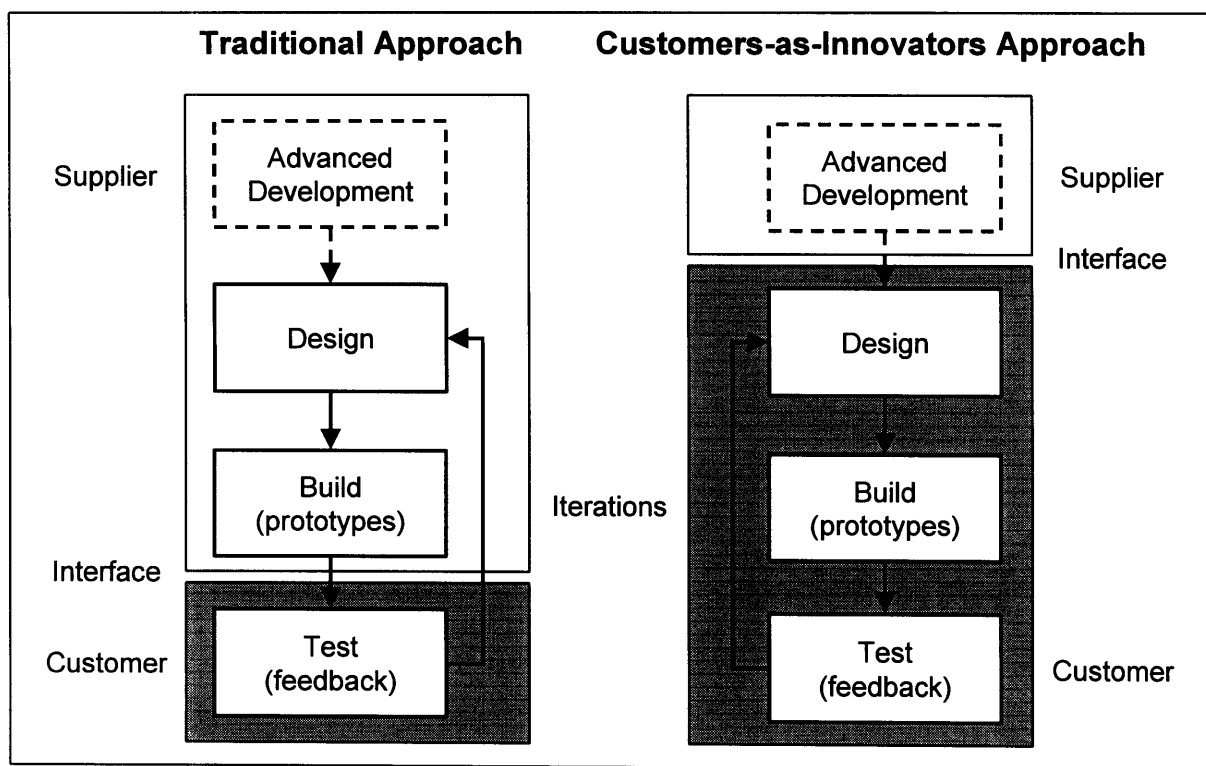
One challenge facing many manufacturers is to listen carefully to what their customers really want and then respond with new products that meet or exceed their needs. These challenges have undoubtedly led to great products and even shaped entire industries. The difficulty of fully understanding customer needs is often a costly and inexact process. Even when customers know precisely what they want, they often cannot transfer that information to manufacturers clearly or completely. And even if those customers who know their real needs could do so, manufacturers often cannot find them and it requires great expense to understand and respond to customer needs.

Thomke & von Hippel (2002) pointed out these problems and extracted an empirical approach from their studies. Their approach is called “Toolkit for Customers as Innovators” (CAI) in which companies equip customers with tools to design and develop their own products, ranging from minor modifications to major new innovations instead of abandoning their efforts to understand exactly what products customers want. The authors introduced actual examples of companies that have adopted this CAI approach, including Bush Boake Allen (BBA), a global supplier of specialty flavors, General Electric Plastics (GE Plastics), and some software companies that utilize open-source software.

The reason why it can take so much time for product development is that the “need” information (what customers want) resides with the customers, and the “solution” information (how to satisfy those needs) lies with the manufacturers. Traditionally, manufacturers have collected the need information through various means, such as market research and information gathering from the field. The process can be costly and time-consuming because customer needs are often complex, subtle, and fast-changing. Frequently, customers do not even fully understand their needs until they try out prototypes to explore exactly what does and does not work. Therefore traditional product development

has been a drawn-out process of trial and error, often ping-ponging between manufacturer and customer.

With the CAI approach, a manufacturer provides customers with the tools needed to design and develop, on their own, the application-specific part of a product. This shifts the location of the supplier-customer interface; also the trial-and-error iterations needed for product development are now carried out only by the customer. The result is greatly increased speed and effectiveness (see Figure 2-3).



(Source: Thomke & von Hippel, 2002, p.76)

**Figure 2-3: Customers-as-Innovators Approach**

Since understanding customer needs and reflecting those needs in real products can be costly, the company trying to create a new product must manage its development costs. Thomke & von Hippel (2002) noted that the CAI approach helps to resolve this problem.

## **2.3. Trial-and-Error Process**

A key point made by Thomke and von Hippel (2002) is that outsourcing product development to customers by adopting a CAI approach should not be viewed as a way to eliminate the trial-and-error process. To create new products that do a good job of reflecting customer needs, it is necessary to go through an iteration process to examine whether the ideas generated from R&D will meet customer needs. In this examination process, Thomke (2001) indicated that enlightened experimentation is useful for R&D activities.

### **2.3.1. Enlightened Experimentation**

Thomke (2001) pointed out that a major development project can require literally thousands of experiments, all with the same objective—to learn whether the product concept or proposed technical solution holds promise for addressing a need or problem, then incorporating that information into the next round of tests so the best product ultimately results. He also noted that in the past the testing process was relatively expensive, so firms were frugal about the number of experimental iterations. Today, however, new technologies such as computer simulation, rapid prototyping, and combinatorial chemistry enable companies to create learning more rapidly, and that knowledge can be incorporated in more experiments at less expense. Moreover, new technologies affect everything, from the development process itself (including the R&D organization), to how new knowledge (learning) is created. Thus, Thomke suggests, for companies to be more innovative, they must overcome both managerial as well as technical challenges. He suggests these four rules for enlightened experimentation:

#### **(1) Organize for rapid experimentation**

- Examine and, if necessary, revamp entrenched routines, organizational boundaries, and incentives to encourage rapid experimentation.

- Consider using small development groups that contain key people with all the knowledge required to iterate rapidly.
- Determine what experiments can be performed in parallel instead of sequentially. Parallel experiments are most effective when time matters most, cost is not an overriding factor, and planning the next round of experiments.

**(2) Fail early and often, but avoid mistakes**

- Embrace failures that occur early in the development process and advance knowledge significantly.
- Don't forget the basics of experimentation. Well-designed tests have clear objectives (what do you anticipate learning?) and hypotheses (what do you expect to happen?). Also, mistakes often occur when you don't control variables that could diminish your ability to learn from the experiments. When variability cannot be controlled, allow for multiple, repeated trials.

**(3) Anticipate and exploit early information**

- Recognize the full value of front-loading: identifying problems upstream where they are easier and cheaper to solve.
- Acknowledge the trade-off between cost and fidelity. Experiments of lower fidelity (generally costing less) are best suited in the early exploratory stages of developing a product. High-fidelity experiments (typically more expensive) are best suited later to verify the product.

**(4) Combine new and traditional technologies**

- Do not assume that a new technology will necessarily replace an established one. Usually, new and traditional technologies are best used in concert.

- Remember that new technologies emerge and evolve continually. Today's new technology might eventually replace its traditional counterpart, but it could then be challenged by tomorrow's new technology.

### **2.3.2. R&D Applied to Service**

Thomke (2001) emphasizes that experimentation can play a major role in reflecting customer needs in new products in R&D activities. But he also argues that empirical and formal R&D methods are performed only by manufacturers. Thus R&D activities in industries where service is crucial were still not well organized.

Beginning with that perspective, Thomke (2003) discussed about how to manage R&D in service and showed that the kind of R&D experimentation typically conducted by manufacturers could also be usefully applied in the service industry. He provided an actual example of the kind of R&D performed by Bank of America.

Thomke indicated that the difficulty of performing R&D in service is due to the fact that service is intangible. Because service often exists only at the moment of its delivery to a customer, it is difficult to isolate in a traditional laboratory. And since many services are tailored to individual buyers at the point of purchase, those services cannot be tested in large samples. As a result, experiments with new services are most useful when they are conducted live, with real customers engaged in real transactions. These live experiments magnify the cost of failure, and are harder to execute and measure.

Given these challenges, in general most service firms have not established rigorous, ongoing R&D processes. However, Thomke (2003) introduced an important exception—the Bank of America which, for the past three years, has been running a series of formal experiments aimed at creating new service concepts for retail banking. The bank turned a set of its branches into a kind of “laboratory” where a corporate research team can conduct service experiments with actual customers during regular



business hours, measure results precisely, and compare them with results from control branches. This has enabled the bank to pinpoint attractive innovations for broader rollout.<sup>1</sup>

During his presentation of the Bank of America case, Thomke extracted a number of issues to be managed in live experiments in service development. First, the live experiments should be small enough to limit risk to the entire business, yet be large enough to support a wide range of experiments. Second, the result of live experiments should be measured exactly. Finally, the bank had to manage the capability of experimentation.

## 2.4. Summary

In this chapter, I introduced some formal R&D methods identified in the literature. The various authors pointed out factors needed for successful R&D activities: generating new ideas and screening them, understanding customer needs, and conducting several iterations of trials.

To analyze the R&D process in the banking industry, the key factors were the following:

- ◆ Identify abundant new ideas and screen all of them carefully
  - *Widen the mouth of the “Development Funnel”.*
  - *Narrow the funnel’s neck.*
  - *Ensure that selected projects deliver on the original objectives of the project as it was approved.*
- ◆ Grasp real customer needs
  - *Identify the real customers*
  - *Identify exact customer needs*
  - *Manage the costs of understanding customer needs.*

---

<sup>1</sup> The details of the R&D activities of Bank of America are shown in Chapter 5. This case information comes from Thomke (2002).

- ◆ Embody customer needs in new products/services
  - *Organize the front-loaded development.*
  - *Perform trial-and-error iterations enough to reflect customer needs for new products.*
- ◆ Manage R&D in the service industries
  - *Perform “live” experiments.*

Taking into account these insights, in Chapter 6, I will analyze actual R&D activities in a Japanese bank.

## CHAPTER 3

# The Business Environment of the Japanese Banking Industry

---

### 3.1. Regulation of the Financial Business

In many countries, the financial industries are strictly regulated by the federal government, especially regulations that govern the sale of financial products and the establishment of holding companies. To understand the nature of the banking industry, we need to keep in mind the fact that in most countries there are numerous regulations governing the industry, and these strict regulations have a major impact on innovation.

In the U.S., regulation of products forces financial institutions to maintain “firewalls” that completely separate three fields of business: banking, securities, and insurance. Originally, the firewall between the three areas was the Bank Act of 1933 (the Glass-Steagall Act). Glass-Steagall was enacted as a comprehensive reform of the financial system in response to the terrible experience of the Great Depression in 1929. In the U.S., banks and security companies are not allowed to enter other business areas. Later, a regulation for establishing financial holding companies was provided in the Bank Holding Act of 1956. With that Act, banks were (in principle) limited to businesses related strictly to banking. Those legal regulations took away from most financial companies, including banks, any opportunity to enter new business fields.

In Japan, regulations governing the banking industry were similar to those in the U.S. The Japanese government’s Financial Service Agency (FSA) controlled the financial industry through the Banking Act, which prohibited banks from entering other financial areas or launching a holding company—very similar to the Glass-Steagall Act and the Bank Holding Act in the U.S.

The difference between the U.S. and Japanese regulations arose with the legal interpretation of the Japanese banking act. It described, in very ambiguous terms, the kinds of businesses in which Japanese banks could become involved. The net result was that in Japan, bank was unable to do things that were actually permitted in the Japanese banking act, while in the U.S. the banks simply did things that were actually prohibited by the U.S. banking act.

When a Japanese bank decided to create a new business, it had to receive approval from the FSA every time, and the process for obtaining a license involved a tremendous amount of time and effort. This was usually sufficient to discourage most Japanese banks from entering a new business, and kept them confined to a narrow field of limited businesses. Every bank provided the same products and services to their local customers, used the same channels, and there were no new entries in the industry and no bankruptcies until the 1980s. In return for this strict regulation and narrowly defined parameters, the Japanese banking industry remained very stable.

However, in later 1980s, due to fund advancing, securitizing, and increasingly global financial activities, the demand for reform of the strict financial regulations gradually increased in the U.S. In the 1990s, the Treasury Department began to consider deregulation and finally, in 1999, the Gramm-Leach-Bliley Act of 1999 became law, repealing the Glass-Steagall Act of 1933 and allowing banks to enter a specific portion of the security business.

Deregulation also came to the Japanese financial industry. In 1993, after lengthy deliberation, a comprehensive reform of the financial system allowed banks to enter the security business through by means of a security subsidiary. Moreover, banks were allowed to sell securities and insurance products, such as government bonds, mutual funds, and savings insurance.

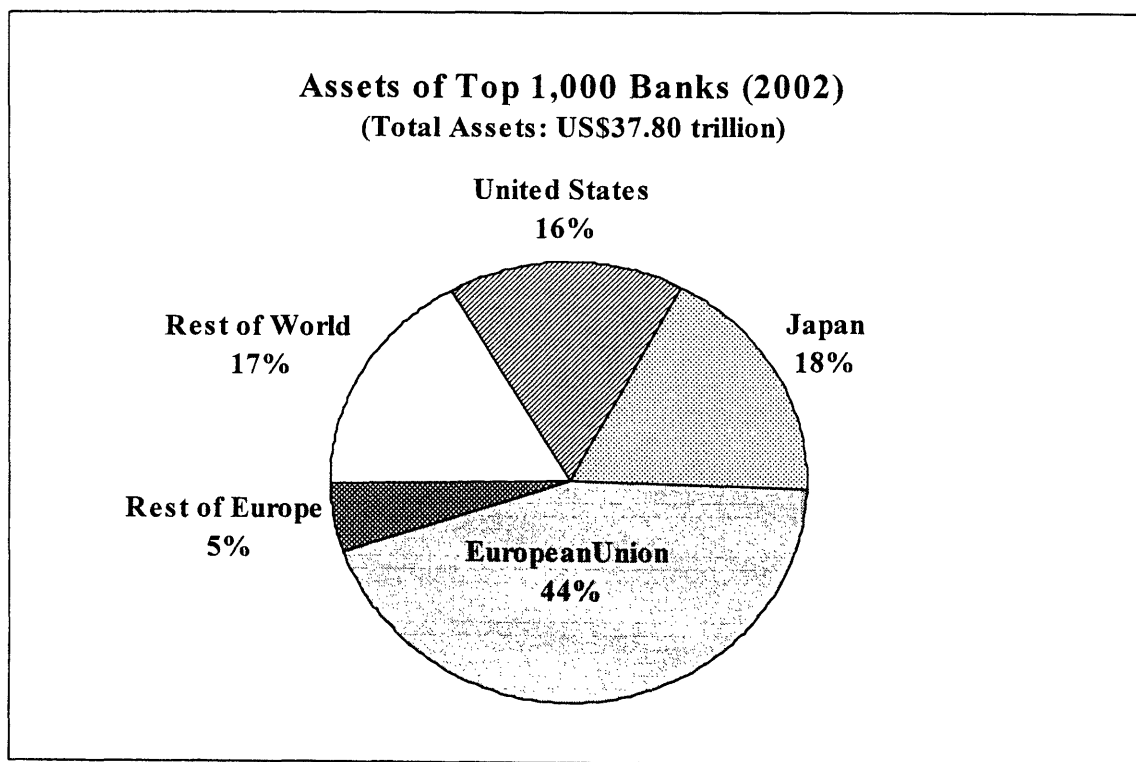
Although the new financial deregulation lowered the barrier to entry and made it easier to enter the financial industry, still today the firewall remains between the banking, security, and insurance sub-industries. In addition, problems with legal interpretations of the Bank Act still hamper the Japanese banking industry. Historically, such circumstances did not generate any increases in the launch of new products and services, nor did it revitalize the motivation for creating new businesses.

## 3.2. Business Environment

In addition to the historical regulation of the banking industry, Japan's banks have had to deal with a lengthy and difficult economic downturn for the past ten years. From the perspective of the business environment, these are hard times for creating new businesses that require certain amounts of investment from Japan's banks.

### 3.2.1. Rise of Japan's Banks

Fueled by the astounding economic growth of the post-World War II period, Japan developed one of the world's most influential banking industries. Measured in terms of assets, the Japanese banking industry is the world's largest, accounting for 18% of the world's bank assets (see Figure 3-1).

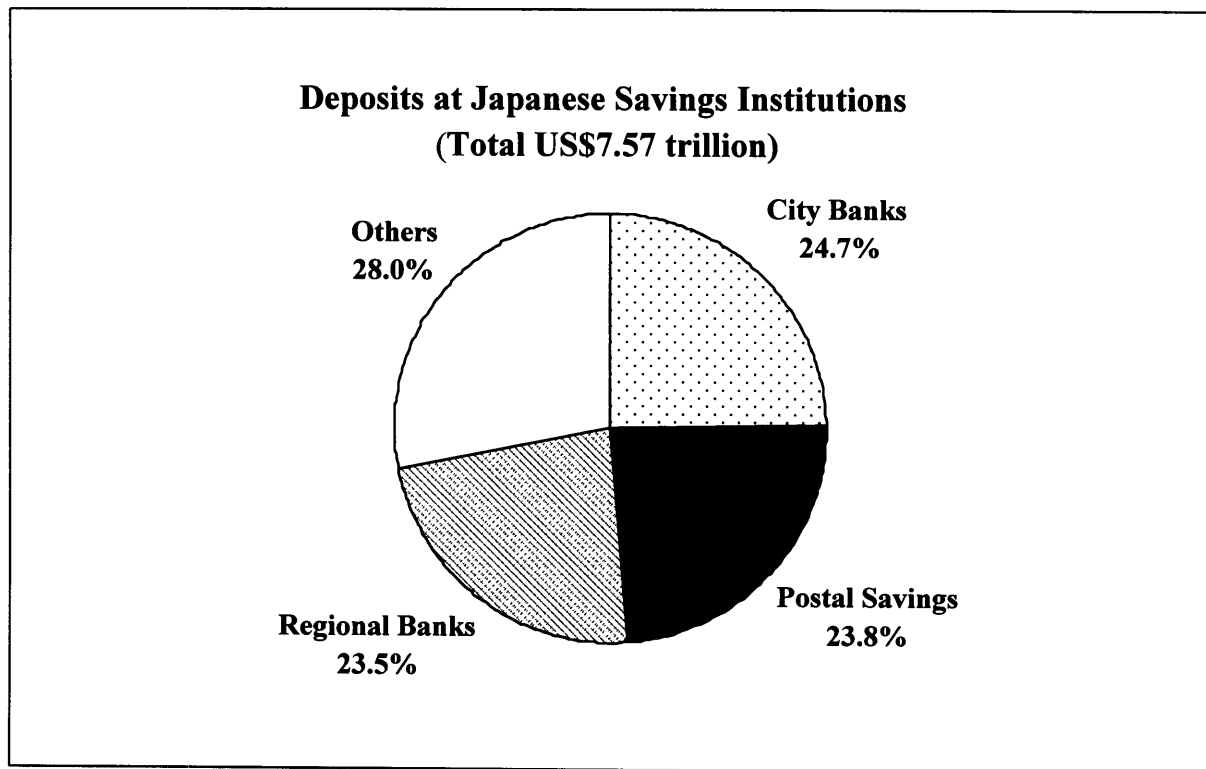


(Source: Bank for International Settlements, <[www.biz.org](http://www.biz.org)>)

**Figure 3-1: Banking Assets by Region**

The huge scale of Japan's banking industry in this relatively small country of 127 million people is due largely to three factors: (1) the highly developed Japanese economy; (2) a high consumer savings rate; and (3) the central role of banks in corporate funding. The financial system was structured such that enterprises rely more heavily on commercial lending than on the capital markets for their funding needs.

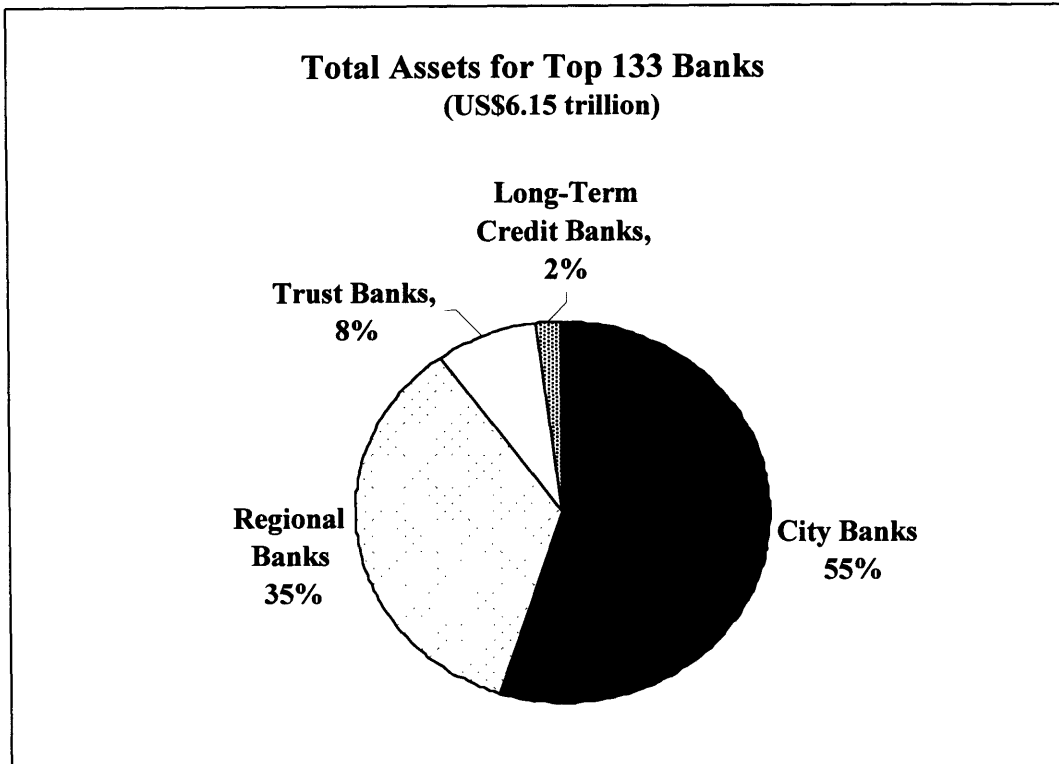
Japan's banking industry is dominated by two major players: the government's Postal Savings system (which was privatized on April 2003), which accounts for 23.8% of all deposits; and a small group of large banks, known as city banks, which hold 23.5% of total deposits (see Figure 3-2).



(Source: Japanese Bankers Association, <[www.zenginkyo.or.jp](http://www.zenginkyo.or.jp)>)

**Figure 3-2: Deposits by Type of Institution**

If one considers the commercial banking market alone, the dominance of the city banks is even more pronounced. Four banks accounted for 55% of Japanese commercial bank assets as of September 2002 (see Figure 3-3).

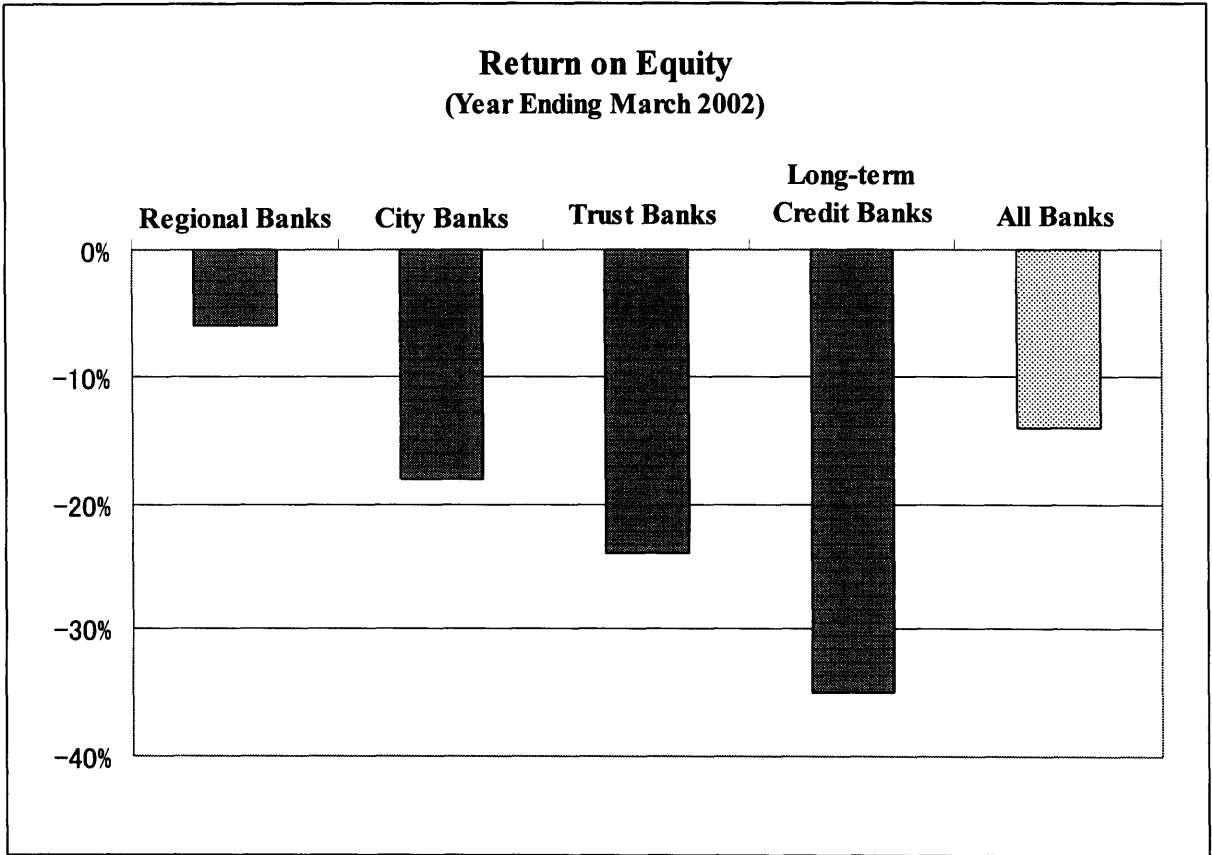


(Source: Japan Statistics Bureau, <[www.stats.go.jp](http://www.stats.go.jp)>)

**Figure 3-3: Assets by Bank Type**

### 3.2.2. Non-performing Loans

After struggling for over a decade with a lackluster economy and the fallout from the bubble years, profitability at Japanese banks today is poor. In fact, measured in the aggregate, every segment of the commercial banking industry showed losses for the fiscal year ending March 2002 (see Figure 3-4.)

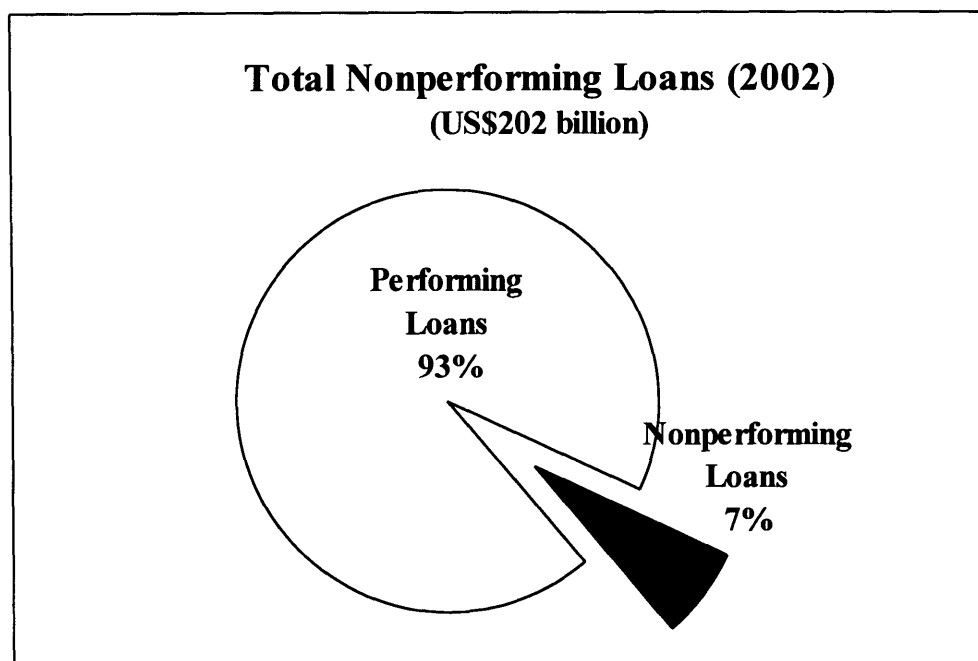


(Source: Japan Statistics Bureau, <[www.stats.go.jp](http://www.stats.go.jp)>)

**Figure 3-4: ROE at Japanese Commercial Banks**

A significant factor depressing bank profitability is the massive amount of bad debt weighing down the banks' lending portfolios. Although the problem has been recognized for years, the banks have been slow to dispose of their non-performing loans. As a result, their bad debt book mushroomed throughout the 1990s, growing to US\$202 billion—7% of total loan assets as of March 2002 (Figure 3-5). In other words, the scale of the problem is at least five times greater than the size of the U.S. savings and loan debacle of the 1980s, which amounted to US\$40 billion.



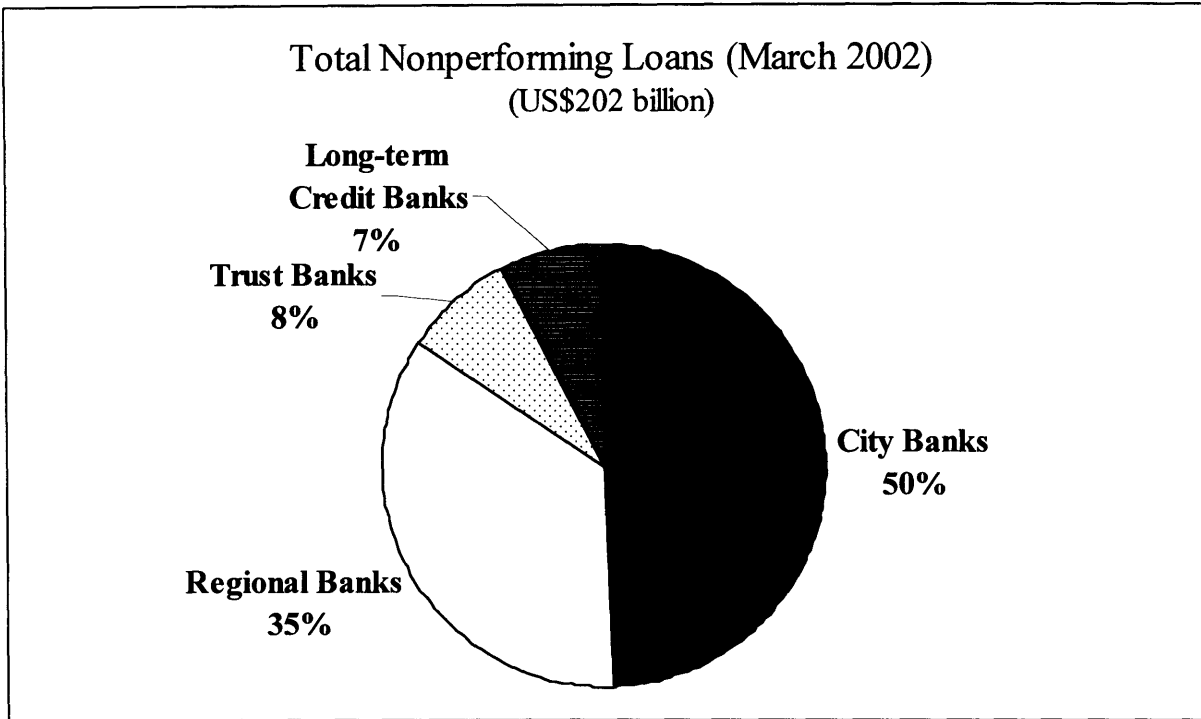


(Source: Financial Service Agency, <[www.fsa.go.jp](http://www.fsa.go.jp)>)

**Figure 3-5: Non-performing Loans of Japanese Banks**

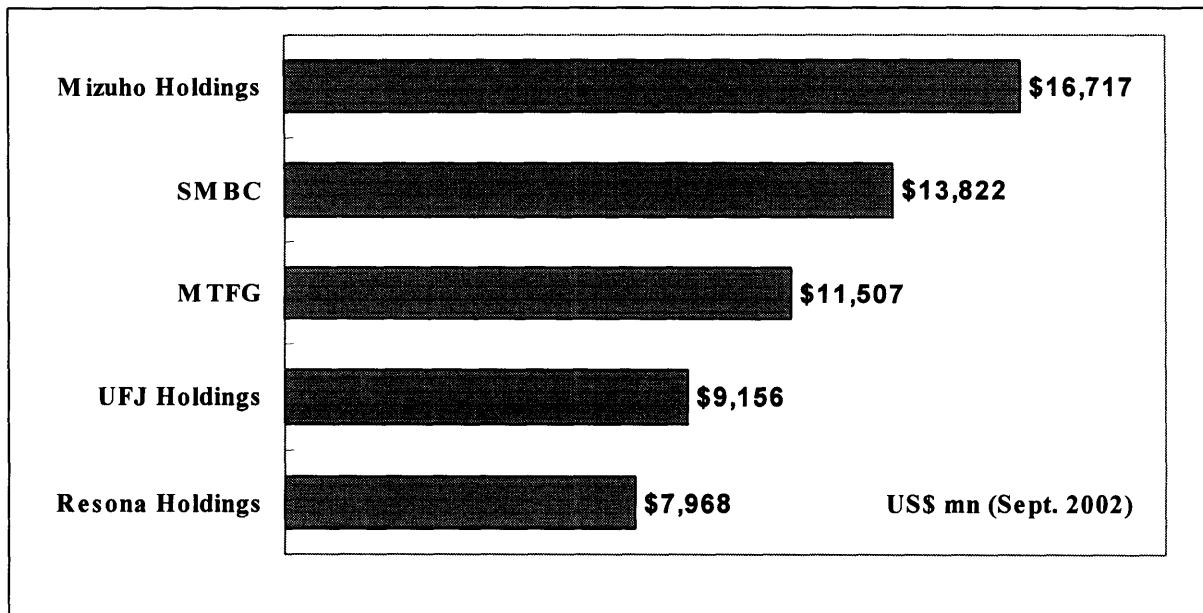
Despite all the bad press heaped on the big four city banks regarding the non-performing loans, Japan's former long-term credits banks (now operating in the private sector as Shinsei Bank and Aozora Bank) hold a proportionally higher share of bad debt—over 7% compared to their 2% share of all bank assets. This is small consolation to the city banks, however, which hold nearly 50% of all non-performing loans in Japan (see Figure 3-6.)

Working together, Japanese industry and the government have become adept at devising various structural schemes to survive the fiscal crisis. In addition, banks are finally committing themselves to a schedule for writing off the worst of the loans. Total loan loss provisions at the big four banks are shown in Figure 3-7.



(Source: Japan Statistics Bureau, <[www.stats.go.jp](http://www.stats.go.jp)>)

**Figure 3-6: Non-performing Loans by Bank Type**

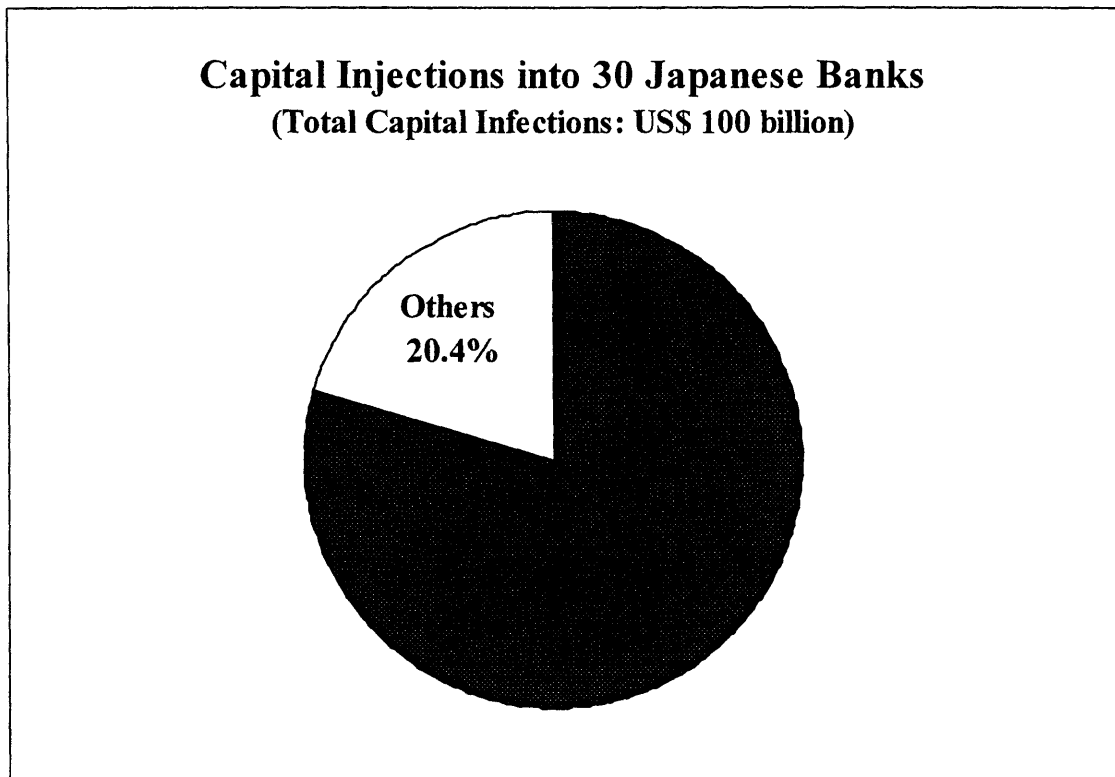


(Source: Japanese Bankers Association, <[www.zenginkyo.or.jp](http://www.zenginkyo.or.jp)>)

**Figure 3-7: Non-Performing Loan Holdings at Major Japan's Banks**

### 3.2.3. Injection of Public Funds and Bank Nationalization

In March 1998, the Japanese government began injecting public funds into the most troubled major banks. Pursuant to the Financial Function Stabilization Law enacted to avoid a crisis in the financial system, approximately ¥1.8 trillion (about US\$16 billion) was infused into 21 Japanese banks, including the four major banks. From that point, up to the present date, ¥10.8 trillion (about US\$98 billion) have been injected into 34 banks in total (see Figure 3-8).



(Source: Deposit Insurance Corporation of Japan)

Note: The data sums up four kinds of capital injections. The Japanese government's capital injection is based on four laws: the Financial Function Stabilization Law, the Early Strengthening Law, the Deposit Insurance Law, and the Financial Reorganization Promotion Law. Details and data are available at the website <[www.dic.go.jp](http://www.dic.go.jp)>.

**Figure 3-8: Capital Injections into Major Japanese Banks**

In addition to the injections of capital, and to prevent further deterioration of bank management, the Japanese government demonstrated strong leadership by deciding to nationalize the banks. In June 1998, the Long-Term Credit Bank of Japan (Shinsei Bank), and in 1999, the Nippon

Credit Bank (Aozora Bank) were nationalized, and were given new management. In May 2003, Resona Holdings, Japan's fifth largest bank, was also nationalized. All three are now in the process of restructuring.

Almost all Japanese banks were injected with public funds by the government so that they could repay the public funds which had been used to generate profits from their businesses which now had to be restructured. This forced Japan's banks to refrain from creating new products and services which required even a small amount of investment.

#### **3.2.4. Reorganization of the Japanese Banking Industry**

After surviving severe competition, Japan's major banks tried to arrange mergers and/or acquisitions and in some cases they actually achieved some successful deals. And foreign players have begun to emerge as investors in Japan's financial market. In January 2003, Goldman Sachs made a US\$1.2 billion capital investment in Sumitomo Mitsui Banking Corporation (SMBC), thus acquiring a 7% stake in the bank. Foreign investors also see opportunities in Japan's non-performing loans, and are buying them up at "sen on the yen" ("pennies on the dollar"), with the aim of retooling them into profitable assets. Taken together, these factors seem likely to ensure the survival of Japanese banks.

In an effort to leverage economies of scale in order to achieve cost reductions and enhance profitability, Japanese banks (mainly the city banks) have engaged in a series of mega-mergers, beginning with Mitsubishi Bank's merger with the Bank of Tokyo (establishing the Bank of Tokyo-Mitsubishi) in 1996. Mergers have caused a decline in the number of city banks—from 11 in 1995 to only 4 today—and have also created some of the largest banks in the world (Table 3-1).

Merging Entities (Pre-merger asset size)	Post-Merger Name	Merger Date	Assets (Mar. 2002)	Global Rank (by assets)
-Fuji Bank (\$421.0) -Dai-Ichi Kangy Bank (\$397.8) -Industrial Bank of Japan (\$308.9)	<b>Mizuho Holdings</b>	April 2002	\$1,140.70	1
-Sumitomo Bank (\$508.1) -Sakura Bank (\$390.9)	<b>Sumitomo Mitsui Banking Corporation (SMBC)</b>	April 2001	\$814.20	3
-Bank of Tokyo-Mitsubishi (\$577.1) -Mitsubishi Trust and Banking (\$153.2) -Nippon Trust and Banking (\$7.1)	<b>Mitsubishi Tokyo Financial Group (MTFG)</b>	April 2001	\$711.40	5
-Sanwa Bank (\$388.9) -Tokai Bank (\$245.9) -Toyo Trust and Banking (\$55.7)	<b>UFJ Holdings</b>	January 2002	\$601.40	12
-Asahi Bank (\$193.7) -Daiwa Bank (\$111.2) -Kinki Osaka Bank (\$33.1) -Nara Bank (\$1.4)	<b>Resona Holdings</b>	December 2001 (Nationalized in May 2003)	\$338.90	36

(US\$ bn)

Sources: Each bank's Annual Reports are available at their respective websites: Mizuho Financial Group ([www.mizuho-fg.co.jp](http://www.mizuho-fg.co.jp)), Sumitomo Mitsui Financial Group ([www.smfg.co.jp](http://www.smfg.co.jp)), Mitsubishi Tokyo Financial Group ([www.mtfg.co.jp](http://www.mtfg.co.jp)), UFJ Holdings ([www.ufj.co.jp](http://www.ufj.co.jp)), and Resona Holdings ([www.resona-hd.co.jp](http://www.resona-hd.co.jp)).

**Table 3-1: Mergers among Japanese Banks**

### **3.3. Holding Companies and Business Units**

As described earlier, Japan's banking industry has been regulated by the government for more than 60 years, and banks were prohibited from establishing financial holding companies by the antitrust law. In December 1997, however, a revision of the antitrust law enabled banks to establish financial holding companies, and deregulation of the financial industry entered another phase. Not only could they leverage economies of scale to achieve cost reductions, but economies of scope became a central issue for financial institutions seeking to enhance their profitability. In particular, the large city banks have been very aggressive about organizing financial holding companies aimed at providing all their customers with a full range of financial services.

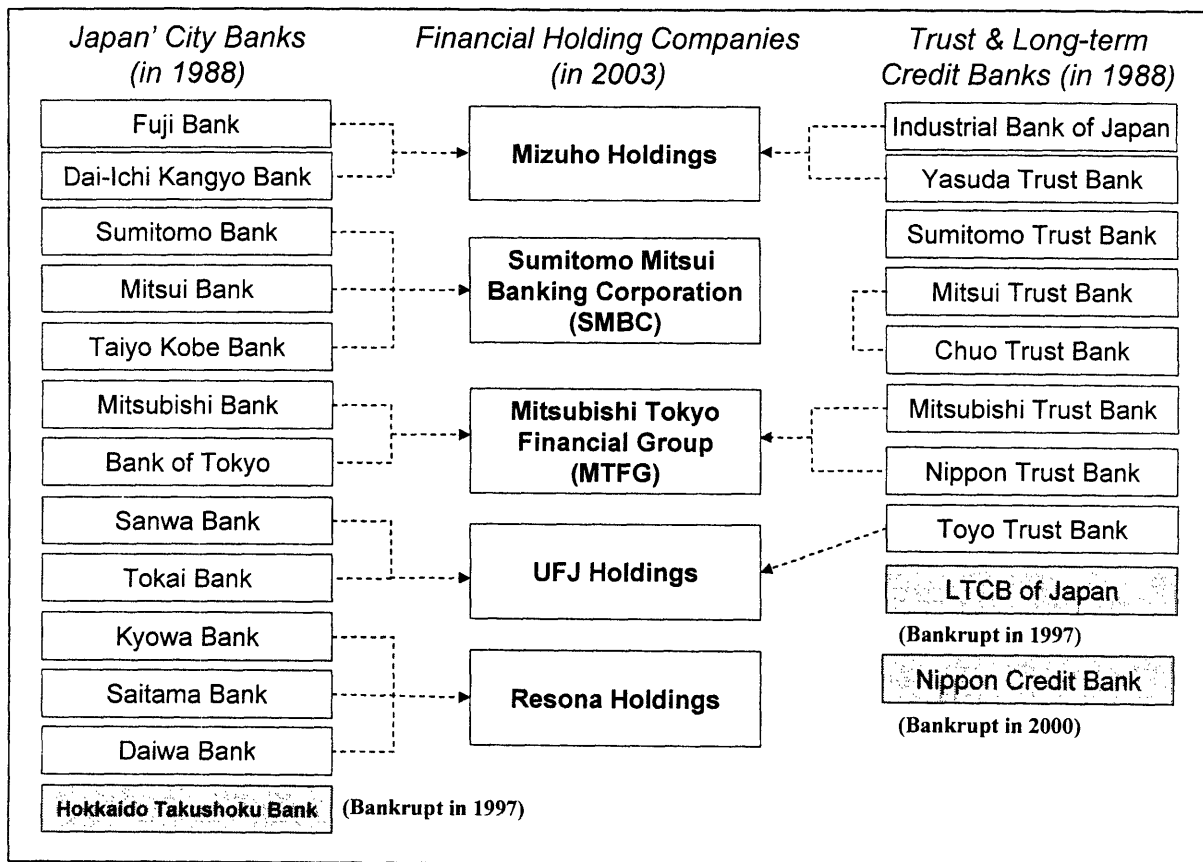
#### **3.3.1. Integration into Holding Companies**

By 2003, the banks were integrated into four large financial groups: Mizuho Holdings (MHFG), Sumitomo Mitsui Financial Group (SMFG), Mitsubishi Tokyo Financial Group (MTFG) and UFJ Holdings (UFJH).

In September 2000, the first financial holding company in Japan, Mizuho Holding (now called Mizuho Financial Group) was established. It was comprised of Fuji Bank, Dai-Ichi-Kangyo Bank (DKB) and The Industrial Bank of Japan (IBJ) and this bank has the largest amount of assets in the world. In April 2001, the Bank of Tokyo-Mitsubishi (BTM), Mitsubishi Trust Bank, and Nippon Trust Bank, were integrated to become Mitsubishi Tokyo Financial Group (MTFG). At the time, UFJ Holdings was also established, which was comprised of Sanwa Bank, Tokai Bank, and Toyo Trust Bank. Furthermore, in December 2002, Sumitomo Mitsui Banking Corporation (SMBC) merged with Sumitomo Bank and Sakura Bank in April 2001, organized as a holding company named Sumitomo Mitsui Financial Group (SMFG).

At the same time, medium-size city and regional banks tried to integrate into a financial holding company based on their strengths in a particular customer segment or geographic region, rather

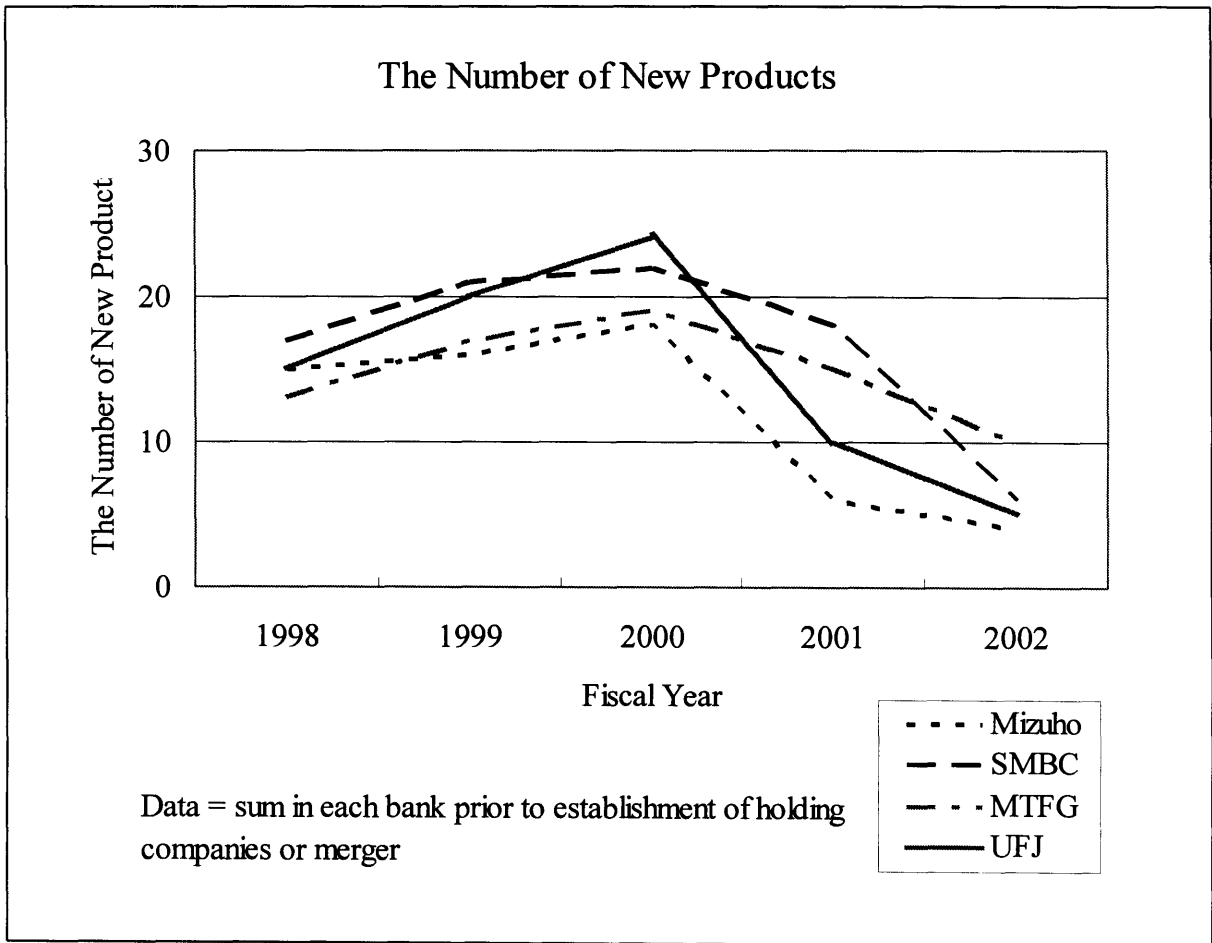
than providing all-around financial services. For example, two mid-size city banks, Asahi Bank (which concentrated on retail banking in the Tokyo metropolitan area), and Daiwa Bank (which had a trust business as well as city bank business based in the Osaka metropolitan area) together established Resona Holdings (RH), which now provides private and retail banking services for the two largest metropolitan areas. Since RH's strategy was different from the big four financial groups, it has established a holding company as a simple organization of each regional-oriented banking subsidiary. Unfortunately, due to deteriorating assets, RH was nationalized by the government May 2003. Figure 3-9 gives an overview of the financial holding companies.



(Source: Data from Japanese Bankers Association <[www.zenginkyo.or.jp](http://www.zenginkyo.or.jp)>. Adapted by author)

**Figure 3-9: Picture of Financial Holding Companies**

Each financial holding company rethought its financial business from the cross-sectional viewpoint and tried to restructure it. Through that process of restructuring, each financial group's growing business was broken down by business categories (banking, trust, security, credit card, etc.) or customer segments (corporate clients, retail customers, etc.) and their overlapping products and services were streamlined rather than investing in new products and services (see Figure 3-10).



(Source: each bank's Annual Reports)

Note: The number of new products in Mizuho is only what could be found in their Annual Reports. Numbers for SMBC, UFJ, and MTFG are based on each bank's internal data, gathered by Bank of Tokyo-Mitsubishi.

**Figure 3-10: Product Introductions in Japan's Four Major Banks**



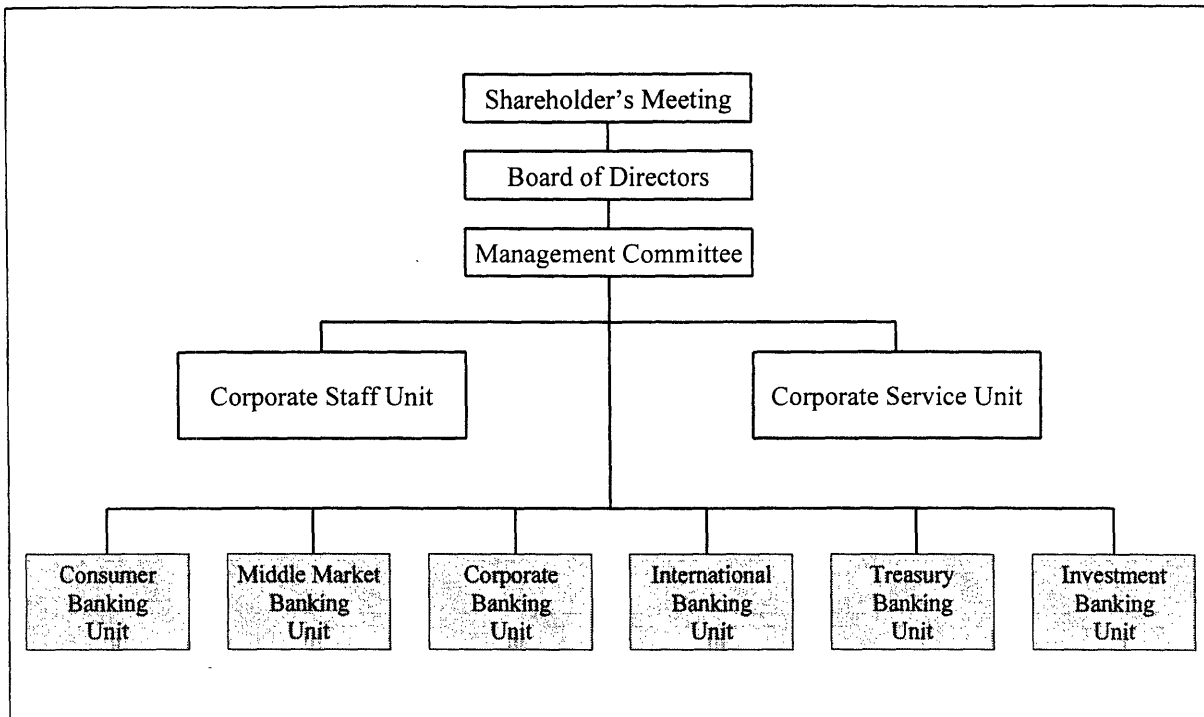
### **3.3.2. Business Unit System**

About the time they established the financial holding companies, Japan's major banks shifted their management system to a 'business unit' system which grants the authority and responsibility needed to manage its specific area and to bolster competitiveness. However, some banks still leave the authority to allocate their managerial resources (such as budget control and human resources) with a centralized administrative organization. This has caused some difficulty receiving funding when those banks decide to create new products and services.

The business units introduced by most Japan's banks are sorted by customer segment (such as corporate clients, small business clients, retail customers etc.) and function (such as commercial banking, investment banking, asset management business, etc.).

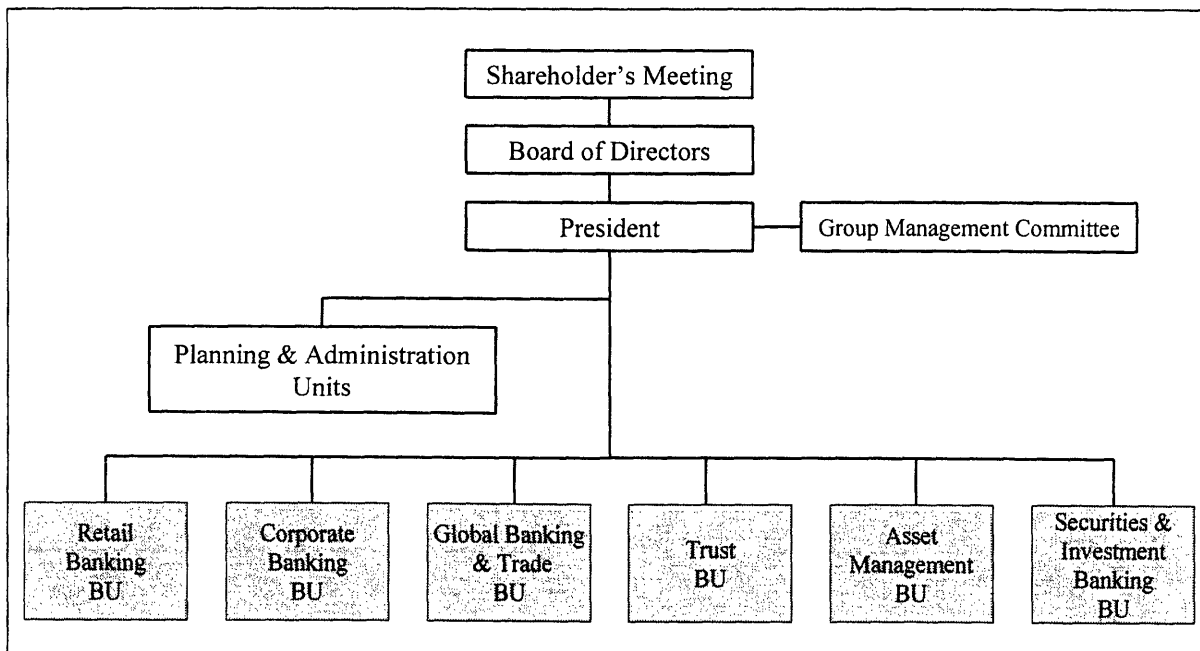
The first move to a business unit system took place in 1999. Sumitomo Bank (now merged into SMBC) introduced its six business units: Consumer Banking, Middle Market Banking, Corporate Banking, International Banking, Treasury, and Investment Banking. It was demanded that each unit achieve specific financial results. However, to achieve such results, the people who could determine resource allocations such as the number of personnel necessary for each business unit, still belonged to the Corporate Staff Unit (an administrative organization) (see Figure 3-11).

In April 2000, Sanwa Bank (now merged into UFJ Bank) also shifted to the business unit system. Sanwa organized three business units: Retail Banking; Corporate Banking, and Global Banking & Trade Banking. After it became integrated into UFJ Holdings, it organized three more business units: Trusts; Asset Management, and Securities & Investment Banking. The business units in UFJ Holdings do not have either the function or the authority to determine the allocation of human resources and budgeting. When they need to pump manpower and money into a new project, they still have to request the departments controlling human resources and budget to allocate funds and people for the new project (Figure 3-12).



(Source: Sumitomo Mitsui Banking Corp., Annual Report, <[www.smfg.co.jp](http://www.smfg.co.jp)>)

**Figure 3-11: Organization of Sumitomo Mitsui Banking Corporation**

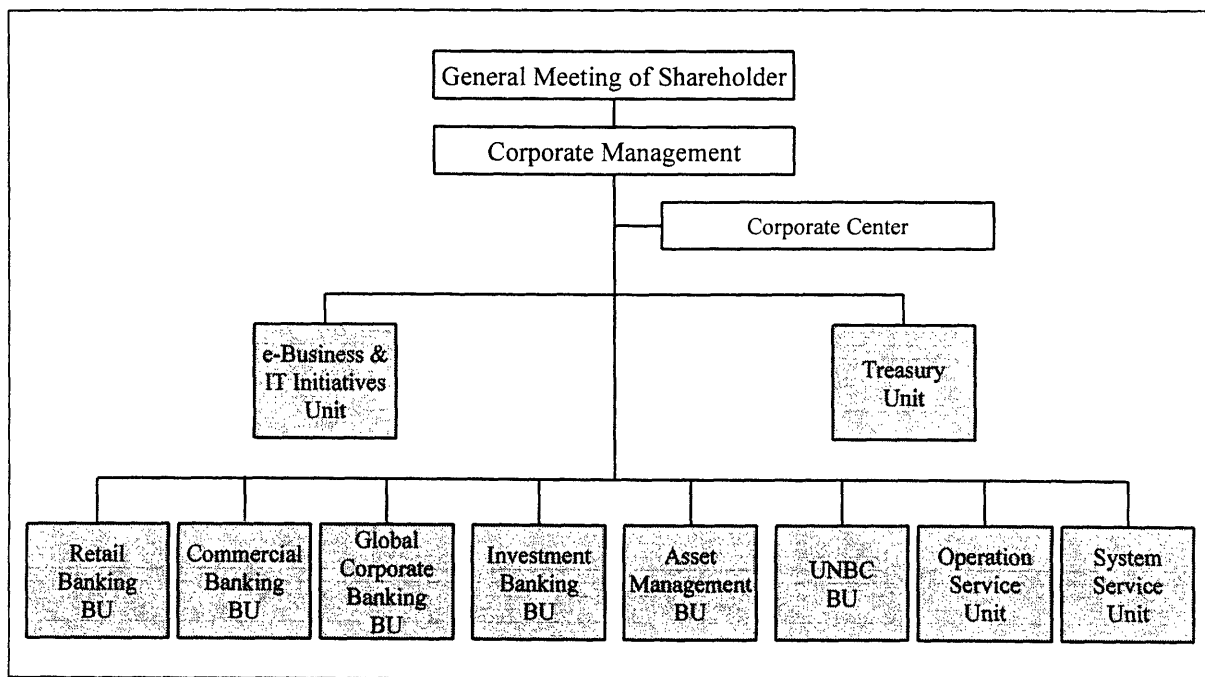


(Source: UFJ Holdings Annual Report <[www.ufj.co.jp](http://www.ufj.co.jp)>)

**Figure 3-12: Organization of UFJ Bank**

The Bank of Tokyo-Mitsubishi (BTM) developed its own unique system when it implemented ten business units in July 2000. Three business units (Retail Banking, Commercial Banking, and Global Corporate Banking) were organized to serve the customer segment, and seven business units were introduced by function: Investment Banking; Asset Management; UNBC (Union Bank of California Corporation); Operations Services; Systems Services; Treasury; and eBusiness & IT Initiatives Unit.

The difference between BTM and UFJ is that the business units in BTM have the authority to allocate their managerial resources by organizing an HR office in all business units and delegating them to convert funds to other purposes that take priority over the original one. In addition, BTM orchestrated its own R&D department—eBusiness & IT Initiatives Unit—as one of its business units. That R&D unit also has the authority to control human resources and budget for its R&D activities. I describe the R&D activities of Japanese banks in greater detail in Chapter 5. Figure 3-13 illustrates the organization of BTM.



(Source: Mitsubishi Tokyo Financial Group Annual Report, <[www.mtfg.co.jp](http://www.mtfg.co.jp)>)

**Figure 3-13: Organization of Bank of Tokyo-Mitsubishi**

### 3.4. Summary

In this chapter, I described the business environment surrounding Japan's banks, which made it difficult for them to enter and invest in new businesses. I discussed the governmental regulations that affect the industry, the troublesome non-performing loans problems, and some organizational issues.

In addition to the general view that R&D activity in a service industry is difficult to organize well, the Japanese banking industry must cope with an environment that reinforces these difficulties, as described below:

- ◆ Regulations that have been in effect for more than 60 years forced Japanese banks to remain confined to banking business, which made the industry uncompetitive, and discouraged the banks from creating and refining services that met customer needs. In addition, the regulations tended to foster a sense of unfamiliarity about innovations in their management system.
- ◆ The need to survive the crisis stemming from non-performing loans severely limited investment in new projects, especially long-term ones that held some risk for generating profits. Despite advances in deregulation for the financial industry, this severe business environment restricted the banks' R&D activities within a narrow managerial range of resources.
- ◆ Although many Japanese banks instituted financial holding companies and adopted a business unit system to improve their competitiveness and efficiency, the authority for resource allocation remained elsewhere and was insufficient for promoting businesses that could meet specific customer needs.

## CHAPTER 4

### Technology Trends in Japanese Banks

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I begin this chapter by describing the technological background at the banks at the time the Internet began to emerge as a powerful influence, as well as the extent to which information technologies (IT) have been invested in and applied to the Japanese banking industry. My focus is to determine the impact of the Internet on Japan's banks in terms of both technology and business. Finally, I will discuss how those technology trends have encouraged Japanese banks to recognize the need to promote well-organized and systematic R&D activities that effectively utilize the Internet to enhance their business.

#### **4.1. IT Investment before the Internet Era**

##### **4.1.1. Investment in Mainframes<sup>2</sup>**

The application of technology in Japan's banks goes back more than thirty years when, in the 1960s, many Japanese banks constructed their first computer system. Since that time, banks have continued to make multi-billion dollar investments into that legacy mainframe system originally built thirty years earlier.

Three waves of investment in mainframes can be identified from the 1960s to 1980s. The first-generation system, introduced in the 1960s, pursued automation and cost reductions in the back-office operation. In those days, the banks faced the issue of how to handle their transactions rapidly due to Japan's increasing economic growth, so they decided to invest in mainframe architecture.

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<sup>2</sup> The details of investment in mainframes by Japanese banks were found in Taniai (2003).

In the 1970s, many banks needed to enhance their first-generation systems, which led to additional investment in their second-generation system. These enhancements arose out of two major requirements. One was the need to integrate application software, and the other was the introduction of cash dispensers (CDs) and automatic teller machines (ATMs). The various software applications used in the first-generation system were not compatible with each other because each was developed independently, on an operation-by-operation basis as the need arose. For example, deposit operations and loan transaction operations were completely separate, and used different, incompatible software. This hindered the ability to improve operational efficiency.

The need for a third-generation system gradually increased in the early 1980s due to the limited throughput capacity of the second-generation system. This was caused by the dramatic increase in the number of customers and transactions, which reflected Japan's vigorous economic growth in those days. Until that point, given the focus on cost reduction, most banks built similar functions with similar architecture in their second-generation system so they could connect with other banks. However, when the need for third-generation systems became obvious, most banks decided on slightly different strategies.

The objectives of the third-generation system can be summarized in four points: (1) restructuring back-office systems; (2) introduction of management information systems; (3) improving external connection functions; and (4) implementing new services, such as security products, which were now possible because of deregulation. Initial investment in a third-generation system amounted to about \$100 million per bank, and every year thereafter, it cost about \$10 million more to maintain it. Such a large investment accelerated every bank's strategy to pursue economies of scale.

#### **4.1.2. Organization for IT Investment**

Throughout the process of developing the third-generation system, Japan's banks centralized the task into a system development department, and steadily enhanced their IT capability. Some of the big banks allocated more than 300 employees to developing and maintaining their mainframe systems,

assigning them to planning, designing, coordinating, and testing tasks. Although most could have opted to outsource the system development process to third-party software vendors with IT expertise, top management in many Japanese banks chose a course of internal development in order to accumulate system-development knowledge based on mainframe architectures that would meet future needs for maintenance and ongoing improvement.

It was difficult in those days to find sufficient people who had good IT knowledge, so the banks sometimes boldly posted people who had no technological background to the system development division, and helped them cultivate skills that enable them to maintain and develop the mainframe systems. The people in that division concentrated only on technical jobs and were completely separate from the bank's core financial business.

## **4.2. Impacts of the Internet on the Banking Industry**

### **4.2.1. The Emerging Internet**

The explosion of the Internet first became apparent in the U.S. about 1995. The first use of the Internet in the banking business was made by Security First Network Bank (SFNB) which, in October 1995 became the first to offer Internet banking services. SFNB was newly established as an Internet-only bank, with no brick-and-mortar branches. Its strategy was to take the monies saved as a result of not having physical branches and allocate it to their depositors in the form of a higher interest rate (SFNB was acquired by Royal Bank of Canada in October 1998).

By mid-1996, some of the larger traditional banks, such as Wells Fargo and Bank of America, also began to offer Internet banking services. However, since they did have physical branches, the objectives of Internet service were to complement existing banking services and to improve customer convenience—different objectives from the Internet-only bank. By the late 1990s, many U.S. banks saw the Internet as a new channel and they established Internet banking services in order to change their

business processes to accommodate that channel. Table 4-1 lists banks in the U.S. that are Internet-only banks.

Name of the Bank	Start Up	Name of the Bank	Start Up
BankDirect	1999	MyBankUSA	2000
ComupuBank	1998	National InterBank	1999
DeepGreen Bank	2000	nBank	1996
directbanking.com	1999	NetBank	1996
E*TRADE Bank	1997	Nexity Bank	2000
Ebank	1999	Presidential Online Bank	2000
everbank.com	1999	Security First Network Bank	1995
First Internet Bank of Indiana	1999	Umbrella Bank	2000
giantbank.com	2000	USAccess Bank	1999
JustBankIt.com	2000	Virtual Bank	2000
Lighthousebank.com	2000	WingspanBank	1999
Millenium Bank	1999	X.com	1999
Moneywise-bank.com	2000		

(Source: Chuo-Mitsui Trust Bank, as of June 2000)

**Table 4-1: The U.S. Internet-only Banks**

The banks' use of the Internet was not limited only to banking services. Some software companies began to produce software that enabled account holders of a bank to connect with the bank via computer through the Internet and thus manage their financial portfolios and transactions. For example, Intuit introduced its bookkeeping program *Quicken*,<sup>3</sup> and Microsoft Corp. launched its own version called *Money*.<sup>4</sup> As the Internet spread into every corner of people's lives, many human activities are now connected through the Internet, and financial services are no exception.

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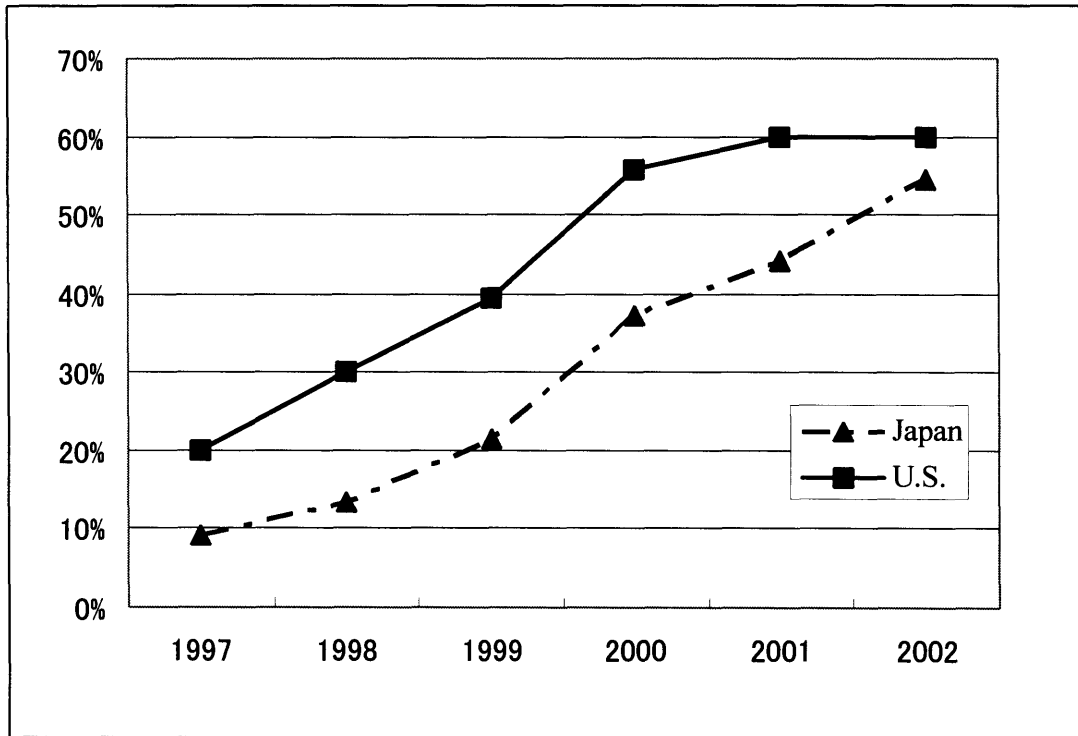
<sup>3</sup> An explanation of *Quicken* is shown at the website ([www.quicken.com](http://www.quicken.com)).

<sup>4</sup> The details of *Money* are available at the website ([www.microsoft.com/money/](http://www.microsoft.com/money/)).



#### 4.2.2. Diffusion of the Internet in Japan

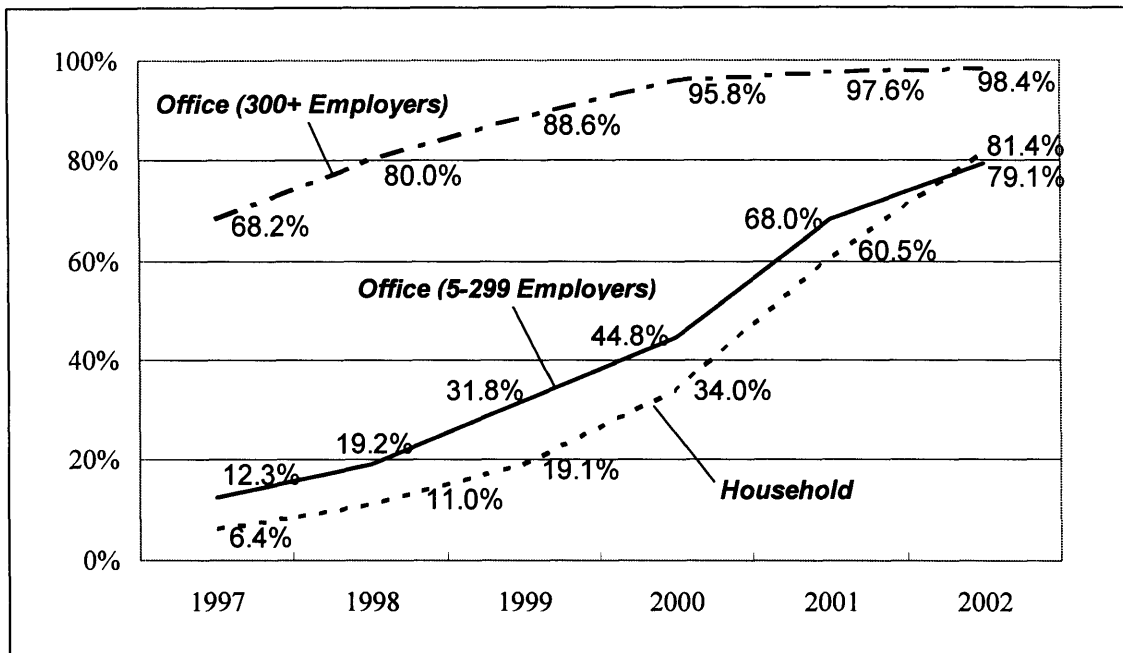
Internet diffusion in Japan, with all its associated services, lagged behind the U.S. by about two years, with the penetration rate (per total population of Japan) had achieved just over 50% by 2002 (see Figure 4-1).



(Source: White Paper Information & Communications in Japan, 2003)

**Figure 4-1: Internet Penetration Rate in Japan vs. U.S.**

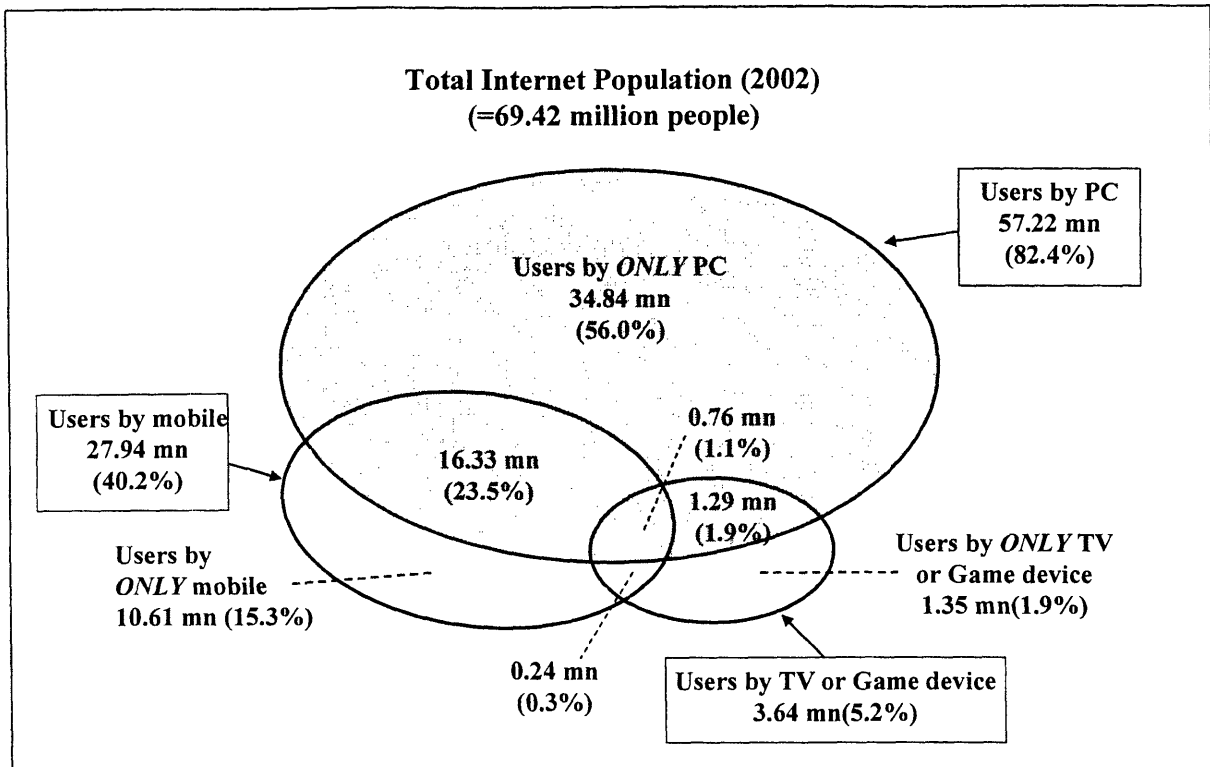
However, observing the Internet penetration rate by households, in 1997 only 6.4% of households used the Internet but by 2002, that number had risen dramatically, to more than 80%. In the beginning, the use of the Internet at the office, especially at large companies, was widespread but household use was still slow (see Figure 4-2).



(Source: White Paper Information & Communications in Japan, 2003)

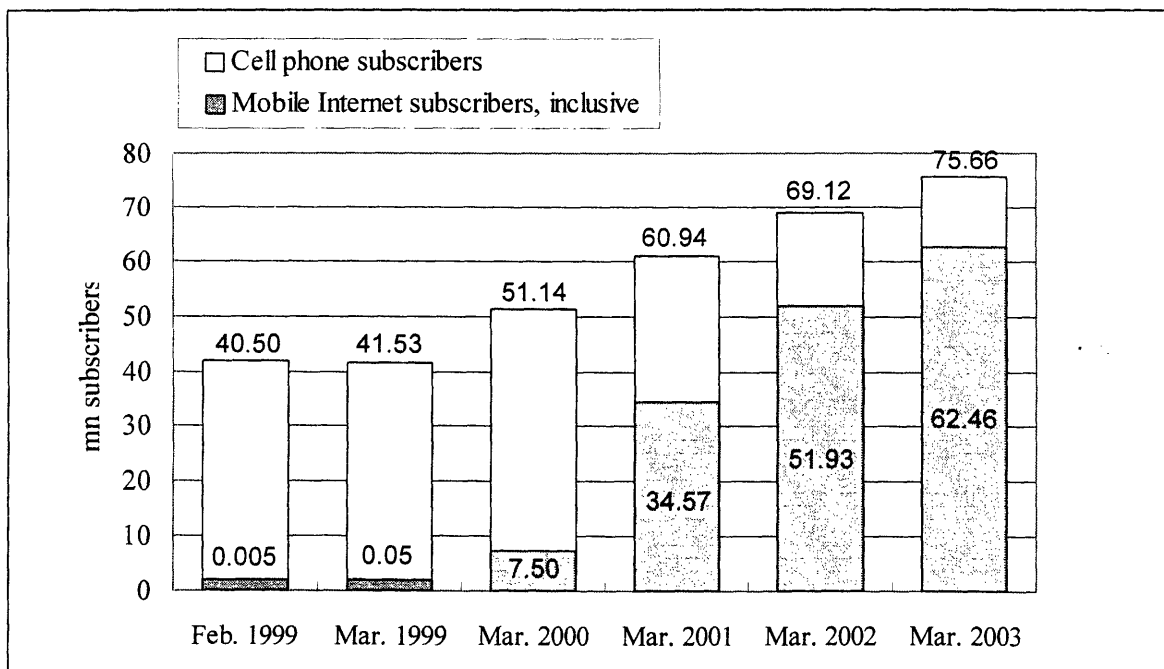
**Figure 4-2: Internet Penetration Rate, by households and offices**

The factor that encouraged diffusion of the Internet in Japan was the explosive spread of cell phone Internet subscribers. In 2002, Japan had 69 million Internet users, and 40% of those (28 million people) accessed the Internet from their cell phone. In terms of Internet compatibility of cell phones in major countries, the proportion of mobile Internet subscribers among total cell phone subscribers is highest in Japan, at about 80%. Such extensive use of the Internet from cell phones means that cell phones have already become one of the major channels for accessing the Internet as a window to communicate between service providers and customers in Japan (see Figures 4-3, 4-4, and 4-5).



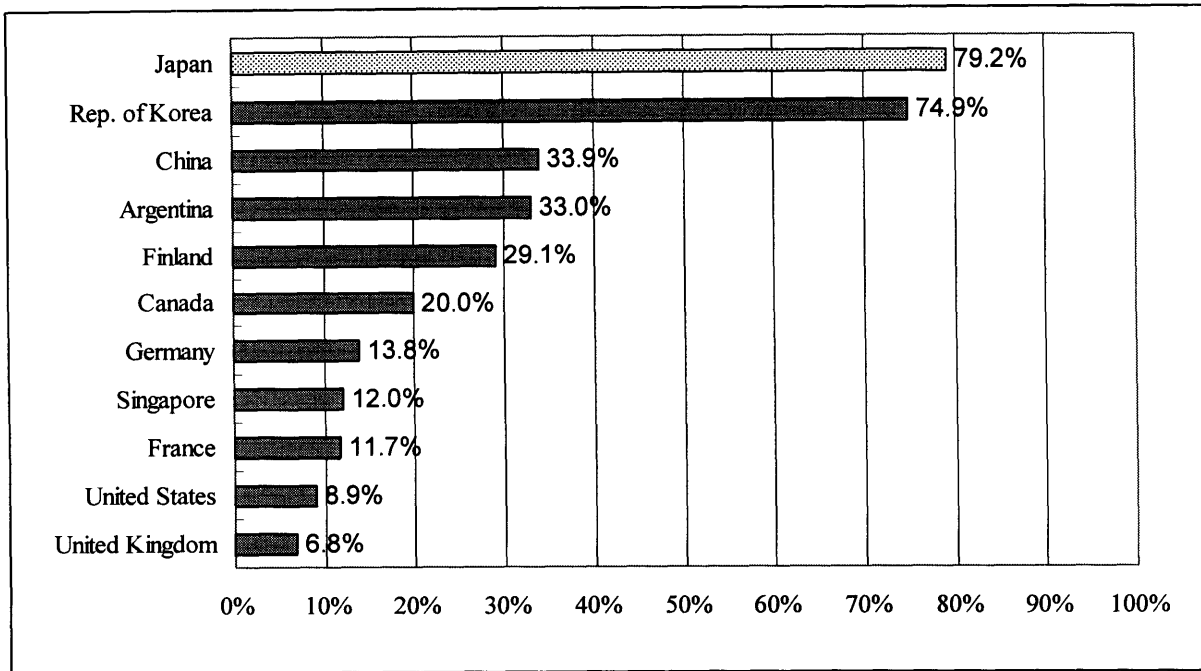
(Source: White Paper Information & Communications in Japan, 2003)

**Figure 4-3: Internet Use Population/Proportion by Access Tool**



(Source: White Paper Information & Communications in Japan, 2003)

**Figure 4-4: Transition in the number of Subscribers to Cell Phone and Mobile Internet**



(Source: White Paper Information & Communications in Japan, 2003)

**Figure 4-5: Cell Phone Internet Compatibility Rate in Major Countries.**

#### **4.2.3. Introduction of Internet Banking Services**

As the phenomena of Internet use and the establishment of Internet banking services became widespread in the U.S., some Japanese banks decided to launch their own Internet-based financial services, beginning in the late 1990s.

Compared with the impacts of Internet service on the U.S. banking industry, the impacts on Japanese banks were somewhat smaller. In the U.S., most individuals and corporations pay their rent/mortgage, electric and water bills, and other monthly bills by using paper checks. Thus, for the majority of American banks, offering convenient services for checking accounts has been central to their competitive strategy. While Internet banking services have attracted most U.S. banks—at least to some degree—as a competitive service for bill-paying, the Japanese banking industry already has a widely used on-line settlement network called the Zengin Payment System, and more than 70% of money transfer transactions between banks to pay bills and settle accounts are done without using paper checks. Moreover, by 1992, using that payment network, most Japanese banks were already providing

electronic banking services for both individual and corporate customers, enabling them to transfer money as well as to check their balances using their PCs or handy devices at home or in the office via public telephone.

This generated the argument whether Internet banking services in Japan would really become such an epoch-making service as it did in the U.S. However, customers did look to Internet banking services for further convenience, such as 24-hour/365-day service and to provide low-cost banking services and high-interest investment products (see Table 4-2). Therefore, Japanese banks had to use their Internet banking services to focus on improving customer satisfaction in order to capture the value generated from that service.

Rank	Requests	%
1	24-hour & 365-day Service (Cashing, Transferring, Debiting etc.)	32.1%
2	High-Interest deposits	19.7%
3	Secure transactions through the Internet and insurances for counterfeiting	13.9%
4	Low service fee such as ATM commission and money transfer fee etc.	12.7%
5	Enhanced transactions by the Internet (Bill payments, Consumers Loan etc.)	6.3%
6	Numerous ATMs easy to access	4.0%
7	No expectations for the Internet banking service	3.9%
8	"Frequent Flier Program" for frequent users of banking services	3.8%
9	Low-Interest Loans	2.7%
10	Information and advisory services through the Internet	0.9%
	Total	100.0%

(Source: Resona Research Institute, 2001. Taken from research by Japan Research Institute, August 2000. <[www.w.ri.co.jp](http://www.w.ri.co.jp)>)

**Table 4-2: Consumer Expectations for Internet Banking Services (July, 2000)**

Sumitomo Bank (now merged into SMBC) established the first Japanese Internet banking service in January 1997 for its retail customers. Fuji Bank (now Mizuho Bank), Sanwa Bank (now UFJ Bank) also launched Internet banking services during 1997-1998. But it cannot be said that those new Internet services necessarily satisfied their customers. Although customers were now able to access their accounts via the Internet, the services were still limited in terms of operating hours and service content. Furthermore, security issues, such as identifying the true user only with a user ID and password,

soon emerged, generating a trade-off relationship between the security of the services and their convenience and usability.

The latest entrant into Internet banking among the Japan's city banks, the Bank of Tokyo-Mitsubishi (BTM) launched its Internet service in 1999, and it provided a solution to that tradeoff. As part of its security, BTM used the "challenge-response identification method" which utilizes a random number table handed to customers of Japan's banks, in addition to the customary user ID and password. To improve usability, the bank spent considerable time prototyping in order to make the interface user-friendly, especially in the user authentication process. Moreover, BTM provided 24-hour/365-day service, a broader range of deposit transaction services, and mobile-accessible banking service.

As mentioned earlier in this section, a large portion of Internet access in Japan comes from mobile phones. As a result, the number of people who used BTM's Internet banking service quickly grew to 1.5 million users in just the first year after its launch, and it became the largest Internet banking service in Japan.

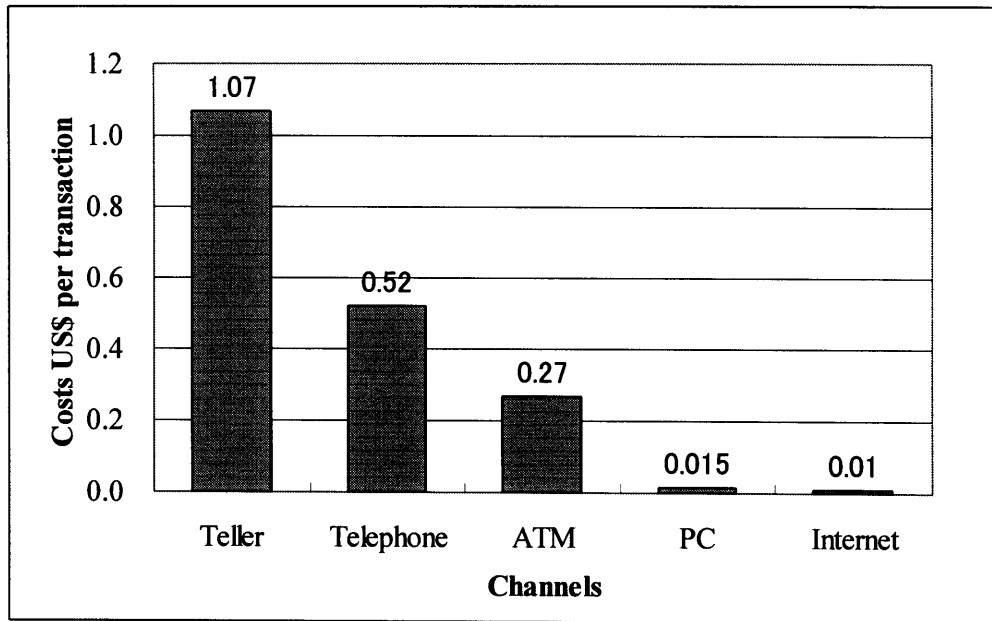
After BTM launched that service, Japan's other major banks continued to improve their Internet banking services by providing products that are unique to the Internet, such as low-interest consumer loans with easy application procedures and rapid responses about individual credit ratings.

In addition to pursuing customer satisfaction, the expanding Internet banking services also contributed to improving the cost efficiency of a bank's operations. In BTM's case, daily transactions through its Internet banking service rose to about 80,000 transactions—equivalent to the number handled by 30 physical branches.<sup>5</sup> According to research by Booz-Allen Hamilton <[www.bah.com](http://www.bah.com)>, the transaction costs of Internet services are much cheaper than other channels. Especially if compared with physical branches using tellers, banks could bring this cost down to less than one-hundredth. Figure 4-6 shows the transaction costs by channel.

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<sup>5</sup> Information about Internet banking services by major Japanese banks comes from BTM research.

Such convenience and savings, when combined with the restructuring strategy required as a result of the drastic reduction of activities in their physical branch offices, meant that expanding into Internet services was strongly promoted in the Japanese banking industry.



(Source: Booz-Allen Hamilton, <[www.bah.com](http://www.bah.com)>)

**Figure 4-6: Transaction Costs of Channels**

#### **4.2.4. Emergence of Internet-only Banks**

Just as occurred in the U.S., the Japanese banking industry had to deal with the arrival of new entrants from outside the industry who offered Internet-only banking services. For these new entrants, building a business model that offered only Internet-based services was far less expensive because they did not need to set up physical branches or use mainframe architecture to construct their main computing system.

Ironically, the first Japanese Internet-only bank, Japan Net Bank (JNB), was established in October 2000 by an existing traditional city bank, Sakura Bank (now merged into SMBC). Following that, Sony Corp., one of the world's largest electronic firms, established Sony Bank, also an Internet-only bank, in April 2001. Sony Bank was the first time a non-banking business entered Japan's

banking sector, and it was made possible by the series of deregulations to the Japanese banking industry in the 1990s. Around the same time, Ito-Yokado, a large supermarket chain, received a banking license from the government and launched IY Bank in April 2001. Although IY Bank was also an Internet-only bank, its strategy was to utilize its network of supermarkets and Seven-Eleven stores (its affiliate), which could function as physical branches by installing ATM machines.

Another Internet-only bank, called eBANK, started operations in June 2001. eBANK was formed by a trading house, Itochu Corp., and it focused on the settlement of payments for small-value online purchases worth up to ¥100,000 (about US\$1,000) with a lower commission than ordinary banks. The details of each bank's strategy is discussed in the following sections

### **Japan Net Bank (JNB)<sup>6</sup>**

Japan Net Bank was founded in 2000 with a capitalization of ¥20 billion (about US\$180 million). Fifty percent of its shares are owned by Sakura Bank, with Sumitomo Bank, Fujitsu, and Nippon Life Insurance each holding 10%, and Mitsui & Co., NTT East, NTT Docomo, and Tokyo Electric Power each holding 5% of the shares. After Sakura and Sumitomo Banks merged in April 2001 to become SMBC, the major JNB shareholder was SMBC, with a 60% stake.

JNB characterizes its financial products and services with four key words: Convenient, Competitive, Customized, and Confidential:

*Convenient* means that JNB customers enjoy seamless financial functions and 24/7 accessibility to their accounts through the Internet. They can carry out transactions or check their accounts through multiple access channels, including ATMs and i-mode. The interfaces are designed to be very user-friendly. Customers are also offered various other services operated by JNB in collaboration with allied companies.

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<sup>6</sup> General information about JNB comes from its Annual Reports and the website <[www.japannetbank.co.jp](http://www.japannetbank.co.jp)>. Additional details are based on the case study, Japan Net Bank (2002).



*Competitive* means that JNB offers attractive interest rates and fees compared with conventional Japanese banks. Its interest rates are more than twice that of the average rates offered by major Japanese banks, and its charges for fund transfer are less than half those of conventional banks.

*Customized* indicates that every customer has his/her own information page on the web. Customers receive e-mail notifications with transaction details, such as receipts for fund transfers, expiration of term deposits, errors made in automatic account debits, etc.

*Confidential* represents JNB's policy of strictly secured confidentiality of its customers' private information. Such information cannot be used without their express permission. Information transferred through the network is encrypted with 128-bit SSL (Secure Sockets Layer). The database and servers that store JNB customer information are protected by a firewall and an access-surveillance system. All Internet banking transactions cannot be processed without a password. Moreover, the last login date and time are always indicated at every login to a JNB account, so customers know whether their accounts have been accessed illegally.

JNB's staple services include ordinary deposits, term deposits, money transfers, small-size consumer loans, cash cards, and credit cards. Its access channels include the Internet, dial-up, mail order, telephone, and ATMs. JNB services are also available through NTT DoCoMo's i-mode mobile Internet service. Wired and wireless Net users can open accounts, check balances, and transfer money online, and they receive e-mail notification upon completion of money transfers. Customers have 24-hour access to their accounts through the Internet.

Soon after its launch, JNB began to diversify into services other than basic bank transactions, such as ordinary and term deposits. For example, it allowed online payment of bills for services such as Tokyo Electric Power, Nomura Securities, and Nifty Corp.'s online shopping mall. It also became the official bank of Yahoo! Japan.

As of April 2001, more than 40% of JNB's 130,000 customers were people in their 30s, and more than 32% of those were in their 20s. Seventy-five percent are men, and more than 60% of

transactions are carried out between 5pm and 9am. These figures suggest that the bank attracts Internet-savvy young men who enjoy the convenience of banking after working hours.

JNB expects to generate its main profit from interest on loans. Its business targets, as achieved in FY2002, were to acquire one million accounts, ¥1 trillion (about US\$9.5 billion) in deposits, ¥84 billion in loan balances, and to show a profit by that date.

### **Sony Bank<sup>7</sup>**

Sony Bank was capitalized with ¥37.5 billion (about US\$350 million)—almost twice the capital of Japan Net Bank—but it had a more modest target. Sony Bank promised to provide basic banking services (i.e., deposits, card loans, bank payments, etc.) at launch, but would later develop services such as foreign currency deposits, credit cards, and house loans. Sony Bank's strategy was similar to that of JNB in terms of higher rates, lower fees, a small workforce, and no physical branches. In particular, the new bank's management stressed customized, one-to-one service. Its card loan interest rate was around 6.5% (compared to 9.0% at BTM as of March 14, 2004) and its one-year time deposit rate was 0.145% (0.03% at BTM as of March 14, 2004)

In the beginning, the bank expected to earn revenues chiefly from securities investments rather than its lending business, and it planned to be profitable in three years—a requirement for keeping its banking license.

Customers of Sony Bank can use SMBC's ATMs as well as ATMs at the 'am/pm' convenience store chain. The bank also joined the nationwide system of 25,500 ATMs provided by Japan's state-run postal-savings system. Customers did not pay ATM handling fees until the end of 2001, but beginning in 2002, the bank charged ¥100 (about US\$1) per ATM use. In addition, J.P. Morgan Chase now offers personal financial advice through the web.

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<sup>7</sup> See the website <[moneykit.net](http://moneykit.net)>.

Obviously, Sony Bank expects to benefit from its connection to Sony Group. Other affiliates of Sony Group—businesses that include electronic products, entertainment, life insurance, and credit card loans—have great potential for attracting new clients. In addition, on-line purchases of Sony products through Sony’s related websites can also be handled through Sony Bank’s settlement services.

### **IY Bank<sup>8</sup>**

IY Bank began operation in May 2001. It is predominantly a sprawling ATM network, although Internet-based transactions are also possible. It installed round-the-clock ATMs in 3,650 Ito-Yokado supermarkets and Seven-Eleven convenience stores (its subsidiary) within two years of operation. IY Bank’s ATM network linked up with Sanwa Bank (now merged into UFJ bank), and it also plans to link up with Asahi Bank (now Resona Bank), Shizuoka Bank, and Yokohama Bank (both are large regional banks). It has already joined a combined network of nine city banks (called BANCS), and IY Bank charges a commission whenever a customer of another bank in the network withdraws money from an IY Bank ATM. Because it may take several years for IY Bank to establish its own customer base, the commission income from other banks represents a major portion of the bank’s revenue.

IY Bank intends to be settlement-focused and to develop its loan and card businesses and Internet-based services later. IY Bank installed 24-hour ATMs at 3,650 stores by spring 2002, and will install ATMs at another 7,150 stores within five years.

The bank hopes to reach profitability in two years by taking advantage of the Ito-Yokado group’s existing customer base of 10 million customers per day, and its low-cost operations. It has forecasted that the breakeven point will be 60-70 transactions per ATM per day.

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<sup>8</sup> Information about IY Bank is based on its Annual Report, found at [www.iy-bank.co.jp](http://www.iy-bank.co.jp).

## **eBANK<sup>9</sup>**

eBANK started its operations in July 2001. It specializes in the settlement of payments for small-value, on-line purchases worth up to ¥100,000 while charging a lower commission than ordinary banks. eBANK is operated by Japan Electronic Settlement Planning Inc., which was formed by the trading house, Itochu Corp. and a group of companies in January 2001. By March 2003, its investors included Japan Telecom, Turquoise International, and Ericsson Holding International. At that time, its capital amounted to ¥12.3 billion (about US\$110 million).

To date, all the new Internet-only banks are not yet superior to existing traditional banks. However, these Internet-only banks have made customers aware of the conveniences of the Internet for financial services, and customers are now actually using both Internet-only banks and traditional banks to suit their specific needs. These facts have led many Japanese banks to realize that they must prepare their own Internet-based services and products to meet customer needs. And this realization is becoming a trigger for centralizing that issue as part of the banks' corporate strategy.

### **4.3. Current Technology Trends in Japanese Banking**

How have Japanese banks invested in superior technology to meet customer and Internet demands? Before answering that question, I will first ask whether they can really invest in the new technology sufficiently enough to generate innovation. Therefore, I will begin by discussing recent IT spending trends and the corresponding technological issues facing the banks.

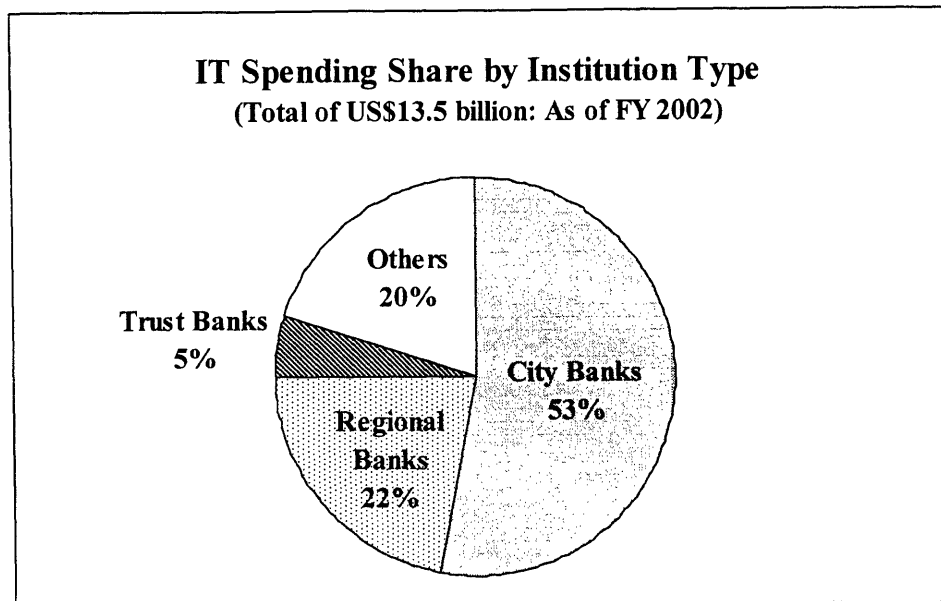
#### **4.3.1. IT Spending Trends among Japanese Banks**

The largest amount of spending on information technology is done by the major city banks, which account for 53% of all the banks' IT spending. As a result of this large share, the recent wave of

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<sup>9</sup> Information about e-BANK taken from its website, <[www.ebank.co.jp](http://www.ebank.co.jp)>.

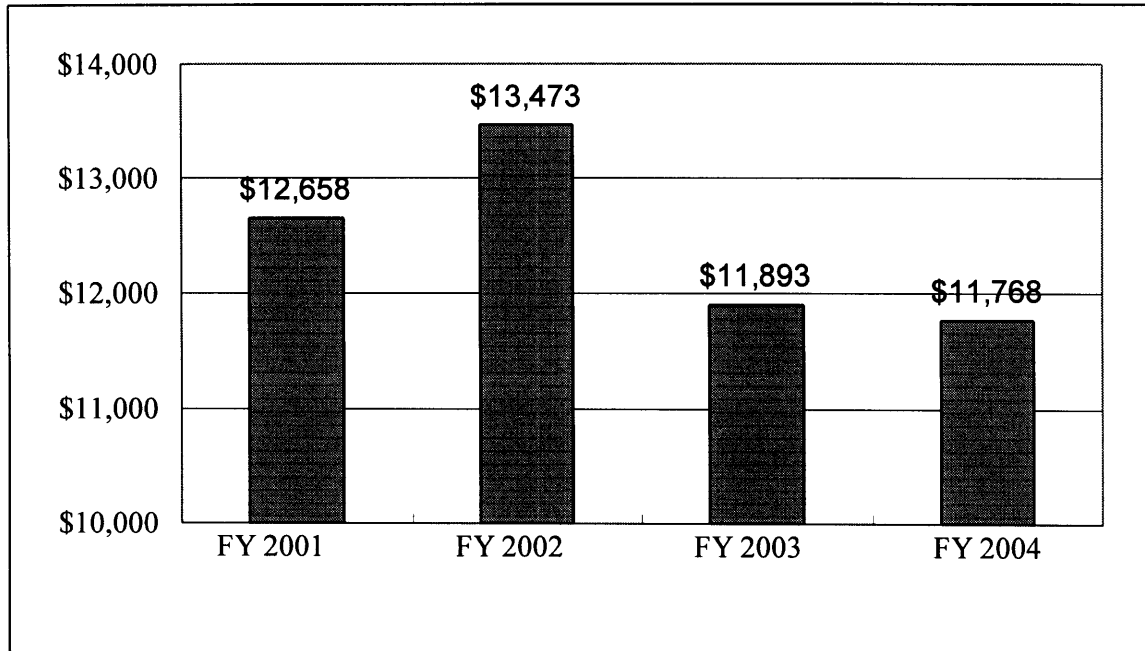
mergers among the city banks has had a significant effect on overall bank technology spending in Japan (see Figure 4-7).



(Source: Japanese Bankers Association, <[www.zenginkyo.co.jp](http://www.zenginkyo.co.jp)>)

**Figure 4-7: IT Spending by Institution Type**

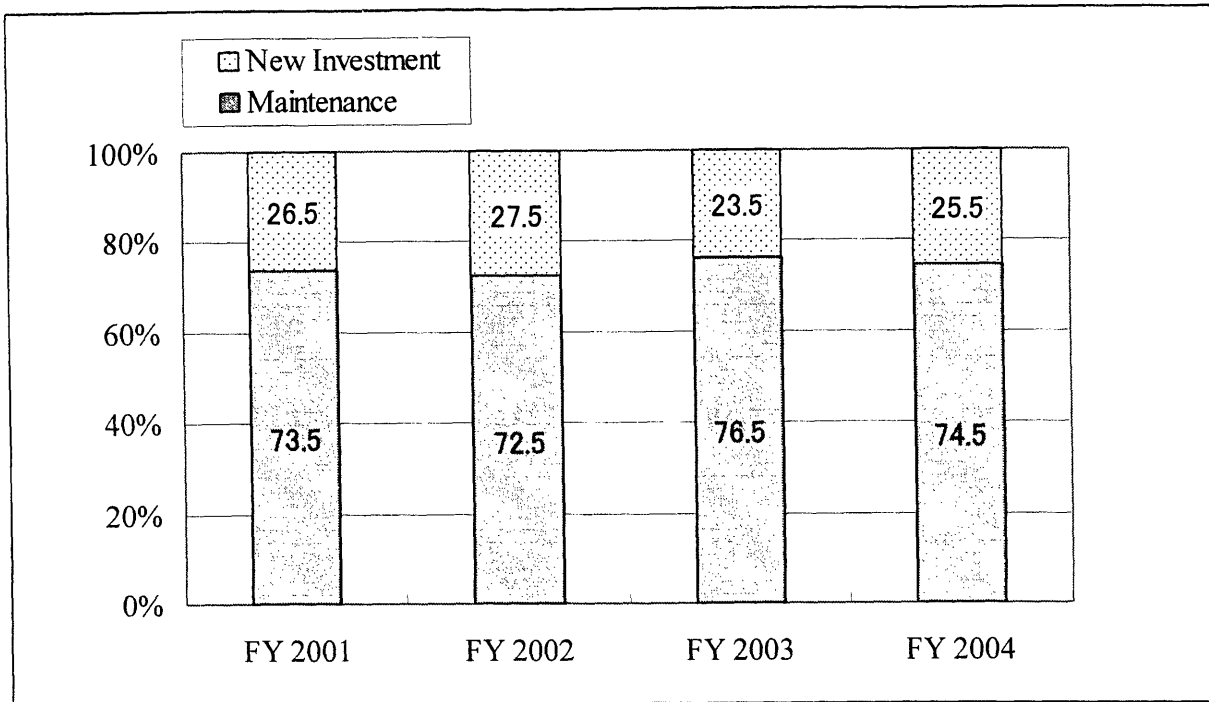
IT spending by Japanese banks totaled US\$12 billion for FY March 2003, an 11.7% decline from the previous fiscal year. This drop can be largely attributed to increase spending caused by the wave of mergers among Japanese largest banks over the past three years. Spending on system migration and consolidations as a result of the mergers peaked in FY March 2002. Although the data is based on their budgets, IT spending by Japanese banks continued to decline through 2003, as the major banks sought operational and cost efficiencies after the wave of consolidation (see Figure 4-8).



(Source: Japanese Bankers Association, <[www.zenginkyo.co.jp](http://www.zenginkyo.co.jp)>)

**Figure 4-8: IT Spending by Japanese Banks (2001-2004)**

IT spending by Japan's banks has two characteristics. First, the portion of internal spending was larger than external spending. Although external IT spending in 2003 was supposed to be more than internal spending, according to the budget, many banks still maintain a policy of developing IT system infrastructure in-house. Second, most Japanese banks' IT investment was devoted to maintaining their mainframes rather than spending for new projects. As a natural consequence, investments in developing new technologies, products/services, and infrastructures still gain little interest. Especially after the wave of major-bank mergers, they instead had to spend money to consolidate their mainframe systems which constrained new investment. Although the competitive need to develop new products and services has grown due to the Internet, which enables people to easily access various financial services and products, the cost of maintaining their existing mainframe systems discouraged any increase in proportional spending on new projects (see Figure 4-9).



(Source: Japanese Bankers Association, <[www.zenginkyo.co.jp](http://www.zenginkyo.co.jp)>)

**Figure 4-9: IT Spending on New Project vs. Maintenance**

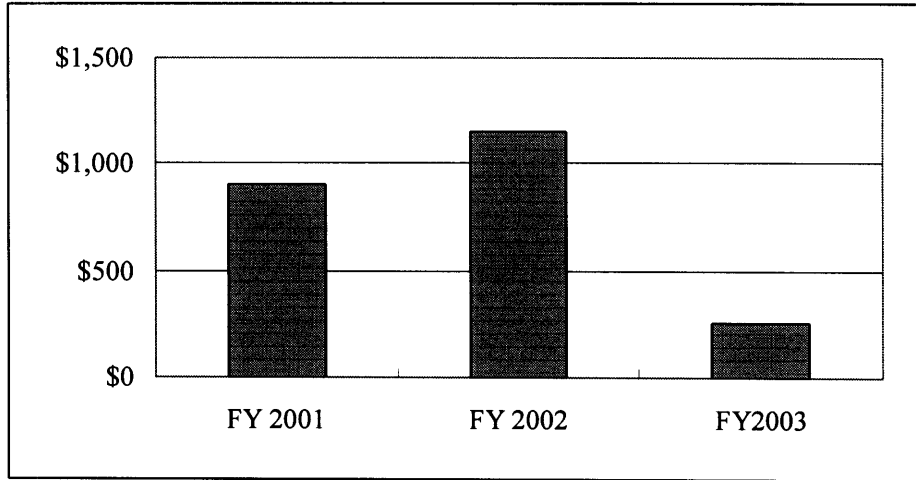
#### 4.3.2. Current Technology Issues

Within the background of IT spending trends described above, there are two broad technological issues that have arisen as a result of those trends. One is the need for systems consolidation caused by the large-bank mergers in the late 1990s. The other is the need to develop open systems.

##### **Systems Consolidation**

An overriding cost to major Japanese banks has been the need to consolidate information systems following the merger of competing institutions to form large-scale banks. As I described early, the past decade has seen a series of large-scale mergers among leading banks in Japan. These mergers have occurred at somewhat regular intervals, meaning that for the past several years at any one time

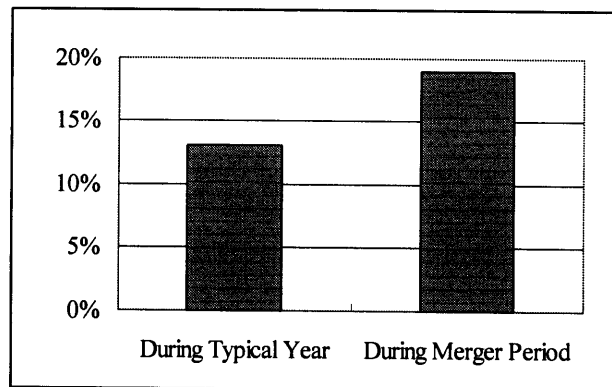
major integration and consolidation work is being carried out at one bank or another, keeping both internal IT decisions and external systems integrators occupied with a steady stream of merger-related consolidation projects that require significant spending outlays (see Figure 4-10).



(Source: Japanese Bankers Association, <[www.zenginkyo.co.jp](http://www.zenginkyo.co.jp)>)

**Figure 4-10: System Consolidation Costs at Japanese City Banks**

Systems consolidation at the mega-banks represents a significant outlay of funds. IT spending at Japan's major banks generally ranges between 10% and 15%, which raises IT spending during these multi-year projects to 20% or higher (see Figure 4-11).



(Source: Japanese Bankers Association, <[www.zenginkyo.co.jp](http://www.zenginkyo.co.jp)>)

**Figure 4-11: IT Spending as Percentage of Operational Expenses**



As the earliest to merge (in 1996), BTM completed the bulk of its consolidation efforts in 1999. BTM adopted a gradual approach, successfully integrating its core systems in stages over several years. In contrast, Mizuho Bank chose a fast-track approach, integrating its systems on a crash-course schedule in an attempt to make a drastic, overnight transformation into its new corporate identity. Due largely to insufficient testing, the plan went famously awry when its payment systems failed as the bank activated the consolidated system on April 1, 2002, disrupting millions of funds transfers nationwide. It took about a month to resolve those system problems, while approximately ¥50 billion of deposits migrated from Mizuho (the world's largest bank) to others during that period.

UFJ Holdings chose a unique approach to systems consolidation. Rather than merging the disparate systems of the multiple financial entities involved in the merger, UFJ integrated them through middleware layers using a hub-and-spokes approach. By adopting this approach, UFJ was able to integrate its systems fairly rapidly over 18 months, in time for the launch of its new corporate entity in January 2002.

SMBC has steadily integrated the systems of the nearly 340 branches of the former Sakura Bank with SMBC's core mainframes during 2002 and 2003. The integration has gone smoothly, in large part because the bank's core systems are distributed among eight mainframes, providing a stable load-balanced environment as well as strong fail-over capabilities.<sup>10</sup>

Looking at these cases of system consolidation in Japan's four largest banks, it is clear that the incremental growth of their mainframes systems grew into heavy burdens on their respective corporate strategies.

It must be noted, however, that other factors contributing to making the problem even more complicated were political issues rather than technological ones. In the case of the BTM merger

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<sup>10</sup> Information about the situation and strategy for each bank's system consolidation is based on research from Bank of Tokyo-Mitsubishi.

between Mitsubishi Bank (MB) and the Bank of Tokyo (BOT), their political tug-of-war did not happen, for example, over which system was integrated into the other, or which system vendors used by MB or BOT would take a leadership role in the project. Instead, based on their business strengths—MB earned most of its profits from domestic commercial banking; BOT from foreign exchange and trade finance outside Japan—BTM decided to separate the systems consolidation into two phases: it integrated BOT's domestic system with BM's mainframe, and then consolidated MB's overseas system with BOT's system.

In the case of SMBC, the former Sumitomo Bank had strong leadership in all areas of their merger. Their merger came about as Sumitomo bailed out Sakura which was struggling with non-performing loans—although the merger was officially characterized as a merger of equals. As a result, SMBC carried out its integration of Sakura Bank's system into that of Sumitomo Bank without deep political conflict.

UFJ took a unique approach because of Sanwa Bank's powerful leadership. Among the members of the newly established UFJ Holdings, Sanwa had the largest amount of assets, the most customers, and was the most profitable bank, so it was inevitable that Sanwa wanted to exercise its strong leadership. Moreover, Sanwa had traditionally promoted its business using a "maverick-style" strategy, as perceived by its customers. For example, in early 1990 when most Japanese city banks were increasing their physical branches nationwide, only Sanwa Bank decided to set up ten times as many ATM-only branches instead of full-operation branches, to improve customer convenience. Sanwa's strong leadership and its novel strategies helped UFJ's system consolidation project to succeed.

In comparison, popular wisdom believed that Mizuho Bank's systems consolidation failure was due to a political tug-of-war among the three banks who were members of Mizuho Financial Group, Fuji Bank (FB), Dai Ichi Kangyo Bank (DKB) and Industrial Business Bank (IBJ). Fuji and DKB had in common branch networks, customers, scale of assets, and profitability. IBJ specialized in investment banking, while other two banks emphasized business. Merging those three banks, which had been such strong competitors in similar business fields, generated a severe tug-of-war throughout the

consolidation process. In terms of systems consolidation, they could not decide which bank's system would be core, and which system vendor would manage the consolidation project. Those situations resulted in major delays of preparation for the systems consolidation as well as technological difficulties when attempting to integrate the three systems into one.

### **Open Systems**

The open network technology is gaining ground among Japanese banks. In particular, new channels and applications are utilizing Windows-based, client-server architecture for at least some portion of the system. Examples include Internet and wireless banking, imaging systems, branch automation, and sales force automation systems. Browser-based applications are also making inroads, although to a lesser extent. There is also growing interest in web services and Linux, although as yet there are few implementations of either of these technologies.

Regarding the use of open systems in the Japanese banking industry, the story of the system replacement (Yoshino, 2001) in Shinsei Bank (the bankrupt former Long-Term Credit Bank of Japan (LTCB)) has impacted the way banking systems have developed.

Shinsei Bank was established in March 2000 as a successor to the bankrupt and nationalized LTCB, which had been acquired by Lippewood Holdings, a private equity fund in the U.S. Although not part of LTCB original focus, the new bank decided to enter the retail banking business in order to restructure its financial business. For that purpose, Shinsei Bank decided to replace the mainframe banking system with an open system based on Windows architecture in order to provide products and services to its customers and to respond more quickly to their needs. As a result, Shinsei Bank constructed a new banking system in only a year for about US\$3 million. It took only one-third the time and one-tenth of the investment compared with usual the three years and US\$30 million needed to create new mainframe architecture.

Many banks already realize that they will have to replace their mainframe systems with open systems in order to respond to customer needs more flexibly. However, it is also obvious that the

replacement and transition costs will be high, so renewing an entire mainframe system that requires a huge investment of funds is so far a tough issue. The reason why Shinsei Bank made that difficult decision could be that it began to rethink, from the ground up, its business and financial projections in order to cut off the adverse legacy of the past which led the former bank into bankruptcy.

#### **4.4. Summary**

In this chapter, I have described how Japanese banks have applied technologies to their business, improved their technological capabilities, and managed the new emerging Internet technology, in particular as compared with the U.S. banking industry. I also noted how the Internet affected Japanese banks where there was considerable restraint about creating new products and services.

The following key points summarize the chapter:

- ◆ IT has been used for more than thirty years in Japan's banking industry, primarily to construct its core system with mainframe architecture. To respond to explosive needs for financial transactions in the high-growth period of the Japanese economy, banks invested vast amounts of money in their mainframes through the development of three generations of the original system. As a result, Japanese banks achieved a reliable backbone system.
- ◆ Organizationally, Japanese banks organized the units devoted to system development by allocating people who specialized in technologically developing and maintaining the mainframes. These people were separated from the bank's financial business in order to develop the IT capability in-house.
- ◆ The emerging Internet had an enormous effect on the banking business in Japan. Customers quickly realized the convenience of handling their financial transactions via the Internet directly rather than using a physical branch office. Although the Internet was immediately recognized by U.S. banks as a solution to the burden of handling paper checks, it was watched by Japanese banks

as a tool with which they could meet more customer expectations for 24-hour/365-day service, high-interest deposits and low-interest loans; also as a way banks could improve operational efficiency. Combined with their ongoing strategies for restructuring, and realizing the possibility of low-cost operations by making use of the Internet, many Japanese banks finally rushed into launching Internet banking services, introducing them in the late 1990s.

- ◆ Some Internet-only banks were established in Japan and the U.S., but most were non-banking entities. In terms of current financial results, Internet-only banks are not yet strong competitors of existing banks. The new entrants fostered a sense of crisis among existing Japanese banks, causing them to promote systematic R&D activities with which they could make better use of the Internet in their banking business.

## CHAPTER 5

### R&D Trends in the Banking Industry

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In this chapter, I will describe trends in R&D activities in the banking industry. I begin by trying to determine how banks perform their R&D activities as compared with manufacturing firms. I will give examples of trends in U.S. banks that are being advanced. Then I will discuss trends among those Japanese banks, especially trends focused on issues of organizational structure and authority. Finally, I discuss some of current issues facing the banks today.

#### 5.1. The Function of R&D in the Banking Industry

As I noted in Chapter 2, much of the literature today points out the difficulties of developing a well-organized R&D activity in the service industry. Thomke (2003) noted that because this kind of service is intangible, often existing only in the moment of delivery to a customer, it is difficult to isolate it in a traditional laboratory as can be done with manufactured goods. Therefore, experiments with new services are most useful when conducted with real customers engaged in real transactions. However, live experiments also magnify the cost of failure, and an experiment that does not succeed may even harm customer relationships and the brand itself. Thomke found that due to such challenges, most service companies have not established rigorous, ongoing R&D processes (Thomke, 2003, p. 71).

The banking industry is no exception. As noted in Chapter 3, since the banking industry historically has been regulated by the government, more than other business fields, it had traditionally downplayed product and service development, which was reflected by a near universal absence of R&D departments. New products and services in the banking industry—if and when they appeared—generally arose from marketing departments that lacked the formal processes, methodologies, and

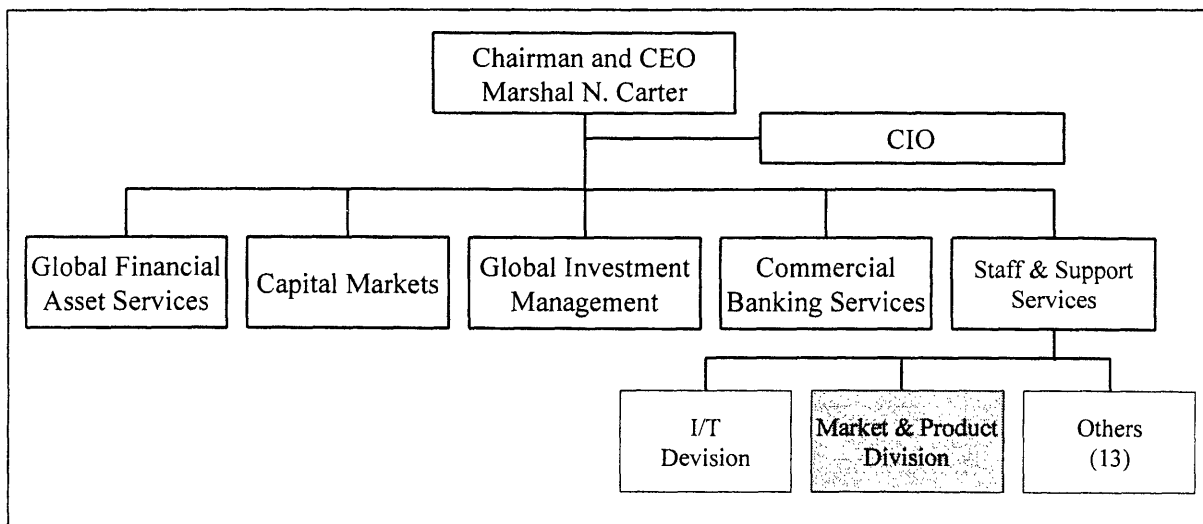
resource commitments that companies in many other industries took for granted. Moreover, as noted in the Japanese examples provided in Chapter 4, although many banks organized in-house IT departments, these were primarily to support ongoing infrastructure changes in technology and software and were not responsible for developing new products and services.

## 5.2. R&D Organizations in U.S. Banks

Beginning in the mid-1990s, some top U.S. banks decided to manage their R&D activities by establishing R&D departments and centralizing their R&D functions. Below are some specific examples.

### 5.2.1. State Street Bank & Trust <sup>11</sup>

In 1994, State Street Bank & Trust Co. (State Street), the third-largest U.S. investment bank, organized a business development team, the Market and Product Development (M&PD) Group, as part of its Staff and Support Service units. Figure 5-1 shows the organizational structure of State Street.



(Source: State Street Bank & Trust Company (1986), p17.)

**Figure 5-1: Organizational Structure of State Street Bank & Trust**

<sup>11</sup> All information taken from Street Bank & Trust (1996).

Bank executives were also allowed to allocate a certain portion of the bank's investment to new product development activities, which increased from 7% to 10% of revenues. M&PD was responsible for "*plucking good ideas from the business units, developing the business case for them, coordinating the various divisions involved in their development, and championing them through to the market,*" according to former CEO, Marshal N. Carter (State Street, 1996). While M&PD was charged with providing support for various aspects of the project, specific activities, such as software development and product specifications, were undertaken by the IT Development Division and by specific businesses during the process of commercializing its products. Carter explained his rationale for limiting the scope of the M&PD:

*Before coming to State Street, I was at Chase Manhattan. Chase had a centralized group that was responsible for undertaking all aspects of product development of new products. When I got here, State Street was at the opposite end of the spectrum. I wanted to steer a balance between the high centralized, strong product management function at Chase and the high decentralized approach being pursued at State Street. The M&PD group was designed to provide that balance. (p. 9)*

By 1995, State Street had rolled out a record 15 new products and financial services, most of them cross-division, bank-wide products.

### **5.2.2. Citibank**

Citibank, the world's largest commercial bank, in 1997 established "e-Citi" (McCauley & Khan, 2002) as an incubator for Internet initiatives, independent from the Citigroup business unit. e-Citi's objective was to brainstorm about creating new products and services, and they met with customers directly in an effort to overcome any natural bias on the part of the bank.

The bank's website gives e-Citi's mission as: *To create new financial services and e-commerce solutions to every customer segment, including large, mid and small-scale business, government and consumers* ([www.citigroup.com](http://www.citigroup.com)).

As a result of e-Citi's efforts, Citibank continuously introduced new products and services from 1997 through 1999, including Citi-f/i (an Internet-based banking service independent of



Citibank's organizations), Citi-Wallet (an Internet debit service for online shopping), Biz.com (an e-commerce support service for corporate clients), and so on. e-Citi actually performed as an incubator that thought up the germ of a business idea that would be oriented by Internet technology within the bank.

In 2000, Citibank announced some internal organizational revisions, which resulted in the establishment of the Internet Operations Group. This new organization was given widespread responsibilities for Internet activities and was required to consider new services that were closer to each business unit than e-Citi had originally proposed. Moreover, the bank also decided to establish two new units, e-Consumer and e-Business, aimed at diffusing the Internet to all consumers and corporate banking businesses. Citibank allocated 1,200 of the 1,600 e-Citi employees to the two new units.

The bank continued to aggressively reorganize its R&D activities, for example, establishing two more new R&D units, e-Capital Market and e-Asset Management, and integrating City-f/i into Citibank. As a result, e-Citi became a technology group at the corporate level, and its mission changed to complementing the business development units such as e-Consumer, e-Business, e-Capital Market, and e-Asset Management.

In order to utilize Internet technologies in ways that satisfied customers, Citibank tried to centralize its R&D activities into a newly established R&D department, but it continued to seek ideas that balanced those brought by the external viewpoints of existing businesses with the ideas generated by the business units that knew customer preferences better than the R&D unit.

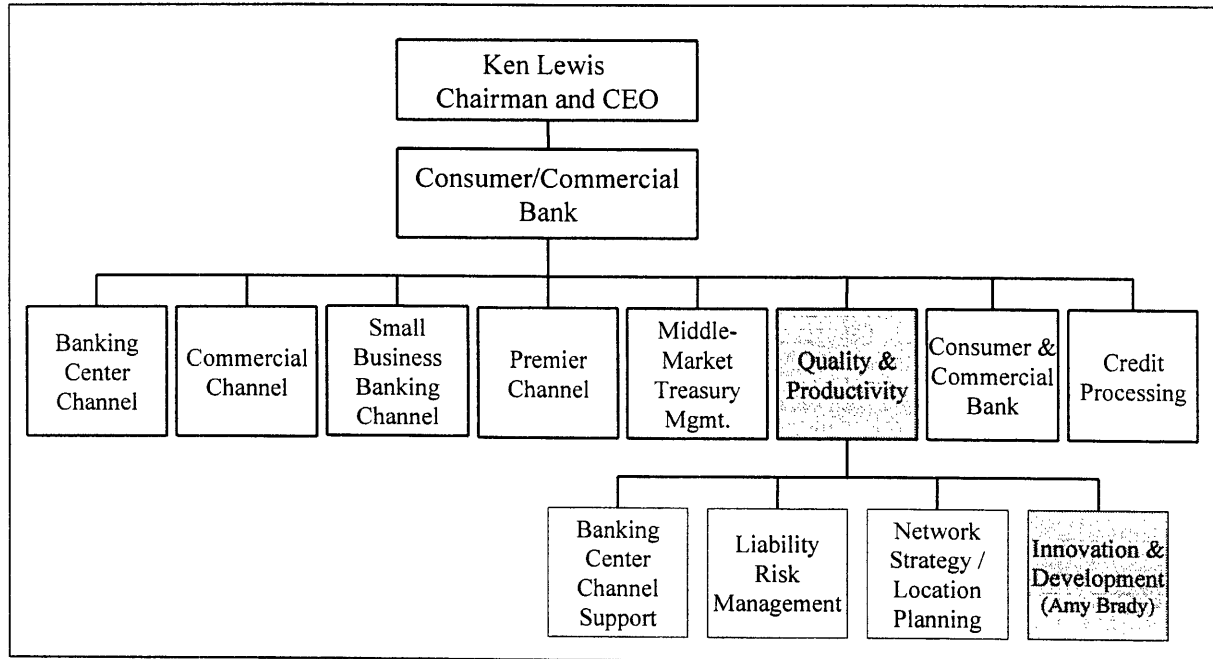
### **5.2.3. Bank of America<sup>12</sup>**

Bank of America (BOA), the second largest U.S. bank, is well known for its systematic R&D activities. In 1999, the bank organized its Innovation & Development (I&D) Team under the Quality & Productivity Department, which was responsible for examining creative ideas that would increase

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<sup>12</sup> Information about Bank of America taken from Thomke (2002).

customer satisfaction and grow revenues. The I&D team also tried to perform “live experiments” in an effort to achieve its goal—to pioneer new services and service-delivery techniques that would strengthen the bank’s relationships with branch customers while also achieving a high degree of efficiency in transactions (see Figure 5-2).



(Source: Thomke, 2002, p.17)

**Figure 5-2: Organizational Structure of Bank of America**

When Kenneth Lewis became the bank’s CEO in 1999, he soon realized that winning the battle for customers would require fresh approaches to service development and delivery. The old *modus operandi* of the banking industry—to provide the same services in the same ways as the bank’s competitors—was a recipe for stagnation. But Lewis faced a major obstacle in achieving his vision, which was that the bank had never made innovation a priority and, as a result, it lacked any formal infrastructure for developing new services. He realized that innovation would require a revolution in thinking and in practice. The I&D team was the instrument of that revolution, so Lewis decided to take an unprecedented step in the conservative banking industry. As Citibank had found, banks face the

problem of where to position their R&D units between the corporate level and the business unit level, and how to test their new ideas with real customers in real transactions. At this point, BOA's approach was progressive, that is, they tried to perform their R&D activities in a manner similar to manufacturing companies. Recognizing that the new products/services that had evolved out of the R&D activities should be tested in the field, the I&D team created an "innovation market" within the bank's existing branches. Amy Brady, I&D team leader, put it this way: "*The Innovation and Development Market is a test bed for creative ideas to increase customer satisfaction and grow revenues.*"

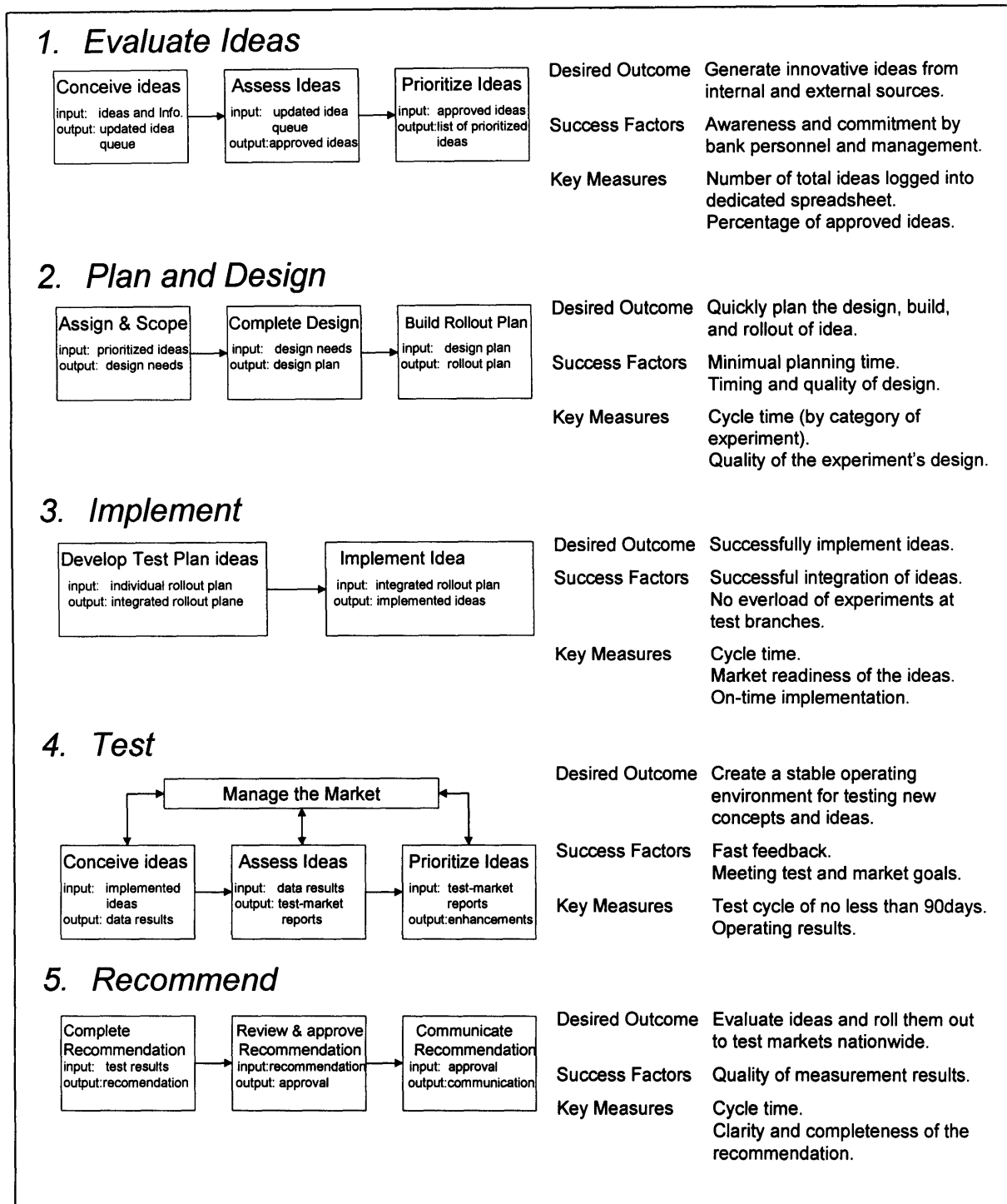
The I&D team reconfigured twenty Atlanta branches into three different models:

1. Five branches were redesigned as "express centers,"— efficient, modern buildings where consumers could quickly conduct routine transactions such as deposits and withdrawals.
2. Five were turned into "financial centers" — spacious, relaxed outlets where customers had access to trained staff and the advanced technologies required for sophisticated services, such as stock trading and portfolio management.
3. Ten branches were configured as "traditional centers," — familiar-looking branches that provided conventional banking services, although often supported by new technologies and redesigned processes.

The team observed the responses and performances of customers who tried the new services at each of the branch types, which enabled them to measure whether the new concepts actually met customer needs. By May 2002, more than 200 new ideas had been generated by the I&D team, and 40 of them were started as formal experiments.

In order to involve the branches in I&D's experiments, BOA got commitments from the general manager of each branch on the condition that the experiments should bring in additional initial revenues. Each was a fully operational bank branch, yet in every location new products and service concepts were being tested continuously. Experiments included virtual tellers, video monitors displaying financial and investment news, computer stations uploading images of personal checks, and "hosting stations."

To select the experiments to be tested in the branches, the I&D team followed the detailed five-step process illustrated in Figure 5-3.



(Source: Thomke, 2003, p.73)

**Figure 5-3: A Process for Service Innovation**

The critical first step was to identify ideas that could be used in possible experiments and then assess and prioritize them. Referring back to the “Development Funnel” by Wheelwright & Clark (1992) introduced in Chapter 2, to widen the mouth of development, the funnel was positioned as the most critical factor for creating new products, and this first step followed that framework. The team categorized each experiment as high, medium, or low priority, based primarily on its projected impact on customers but also taking into account its fit with the bank’s strategy and goals and its funding requirements. In some cases, focus groups were conducted to gain a rough sense of idea’s likely effect on customers.

Once an idea was given approval, the actual experiment had to be designed. The I&D team wanted to perform as many tests as possible, so it strove to plan each experiment quickly. To aid in this effort, the group created a prototype branch at headquarters where team members could rehearse the steps involved in an experiment and work out any process problems before going live with customers.

The experiments it designed brought important rewards to Bank of America. An unprecedented surge of creative thinking about branch banking was generated. Customer satisfaction improved substantially within the I&D market, and the experimental branches have attracted many new customers.

### **5.3. R&D Activities in Japanese Banks**

Japanese banks traditionally have no specific organization for centralizing their business developments or R&D activities. This has happened, not only because it is difficult to do in a service industry but also because of strict government regulations for Japanese financial businesses (as noted in Chapter 3). However, the enormous impact of the Internet has nurtured a spirit of innovation everywhere, including the banking world, as I discussed in Chapter 4.

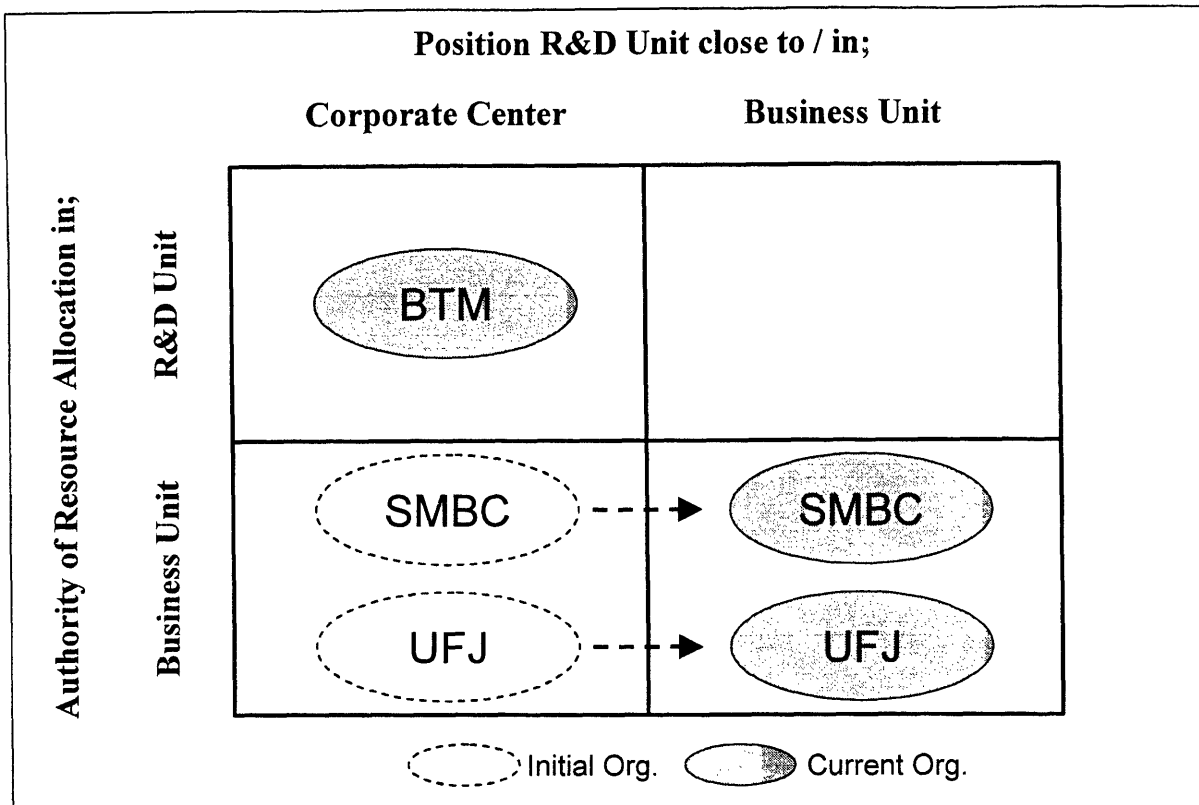
In the late 1990s, many Japanese banks began to organize their R&D activities, with particular focus on creating new products and services that apply the technologies of the Internet. In

establishing R&D organizations, the banks had to deal with two key arguments. The first argument was how the banks should allocate its R&D organization—as a centralized organization at the corporate unit level, or decentralized at the business unit level. The issues needing resolution in this argument were: how to accumulate knowledge about Internet technology, which corporate center or business unit had the capabilities to apply that technology to the business, and how to connect the accumulated knowledge with customer needs.

At this point, many Japanese banks have positioned their R&D department as a centralized organization. Banks that did this decided that accumulating the knowledge about how to use the Internet should be done from a cross-cutting standpoint and the business unit did not have the capability to do that because there was a general company-wide lack of knowledge about the Internet.

The second argument was whether banks should grant authority to the R&D units regarding managerial resources, such as allocating personnel and controlling budgets. As I discussed in Chapter 3, many large Japanese banks shifted their management style to a holding company and business unit system in the late 1990s. Since managerial resources are strictly allocated through the holding company to each business unit in return for excellent financial results, the banks were reluctant to invest in projects that had an uncertain outlook for producing revenues, including projects related to Internet technology. As a result, many banks did not give authority to allocate managerial resources to the R&D units, and instead the resources needed for R&D were squeezed out from the business units that would benefit from the new products and services. Only BTM gave its R&D unit the authority to allocate human resources and control its own budget. Figure 5-4 shows the positioning of R&D organizations and the authority each was granted, as well as the time involved.

The move to organize R&D activities appeared in three large city banks: SMBC, UFJ, and BTM. I will briefly describe the characteristic of the R&D activities in those three banks.



(Source: Author)

**Figure 5-4: R&D Organization Matrix**

### 5.3.1. Sumitomo Mitsui Banking Corporation <sup>13</sup>

In October 1999, Sumitomo Bank (now merged into SMBC) established its e-Business Planning Department under the Corporate Service Unit as a separate entity from its business unit. The new department was responsible for commercializing a new e-business model connected with its existing business. The projects with which this new department dealt focused primarily on its corporate or retail banking businesses. Since it was a centralized R&D organization and did not have the authority to allocate resources, the money needed to promote projects had to be squeezed from the budget of the

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<sup>13</sup> General information about SMBC's organization structure comes from its Annual Report ([www.smfg.co.jp](http://www.smfg.co.jp)). Its strategy for building R&D organizations is derived from research done by Bank of Tokyo-Mitsubishi, including some interviews by the author.

Corporate or Consumer Banking Group. Therefore, it was vital to build consensus between the e-Business Planning Department and the business units in terms of whether the new business would really benefit them.

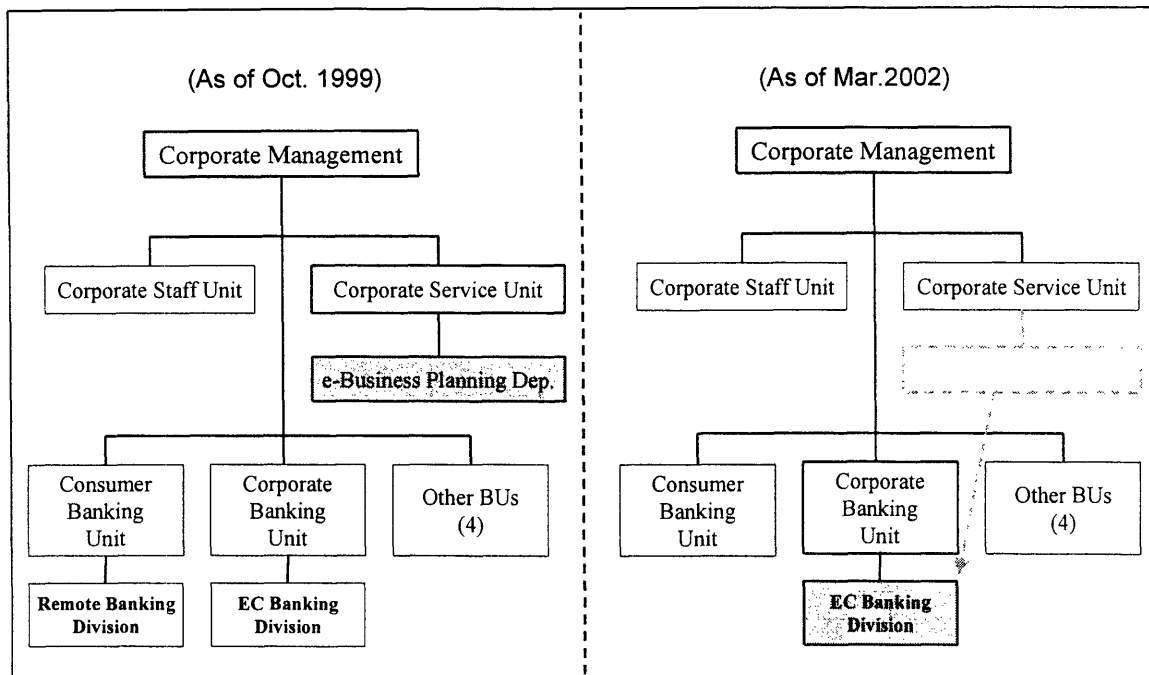
Like other Japanese banks, Sumitomo Bank already operated workstation-based corporate banking offerings, such as its Cash Management Service in the Electronic Commerce Division in the Corporate Banking Group, and the bank promoted Internet banking services for individual retail customers at the Remote Banking Division in the Consumer Banking Group. So, the projects for either the Corporate Banking Group or the Consumer Banking Group could be developed using their internal knowledge and resources. They were even proposed for this project by the e-Business Planning Office, which often promoted business units for such projects.

The R&D department in Sumitomo Bank dealt with three types of project: (1) projects which business units could not promote themselves due to their unfamiliarity with the technology or business knowledge required; (2) projects that constructed company-wide infrastructure by using Internet technology; or (3) projects where it was uncertain whether they would generate revenues or ones that would require a long-term perspective but really needed to be pursued.

Although established as a centralized R&D organization in 1999 after the merger into SMBC, the e-business Planning Department was integrated into Electronic Commerce Department under Corporate Banking Group in 2002. The bank recognized that it was possible for the business unit to develop projects related to the Internet by that time because communications with the R&D unit, generated out of the development processes, had improved their familiarity with the Internet and accumulated knowledge about it.

On the other hand, with regard to R&D activities that used the Internet for the retail banking business, the bank consolidated those activities into Japan Net Bank, originally a subsidiary of Sakura Bank, which had just become a subsidiary of SMBC after merging with Sakura. The R&D unit in SMBC finally shifted its development of Internet services and products from a centralized organization to a decentralized one (see Figure 5-5).





(Source: SMBC Annual Reports, 2000, 2003)

**Figure 5-5: R&D Organization in SMBC**

### 5.3.2. UFJ Bank <sup>14</sup>

The former Sanwa Bank, now merged into UFJ Bank, established its R&D organization, called the e-Business Planning Office, in 1999. The bank positioned this centralized R&D office as a sub-office of Corporate Planning Office. The role of this office was not to develop new services and products by itself but to propose strategies for how to apply new Internet technologies to each business unit and to support them. Thus, the each business unit was the actual instrument of an R&D project, and the managerial resources needed for the project were also squeezed out of the business unit's budget. Although the e-Business Planning Office did not have the authority to allocate managerial resources, it

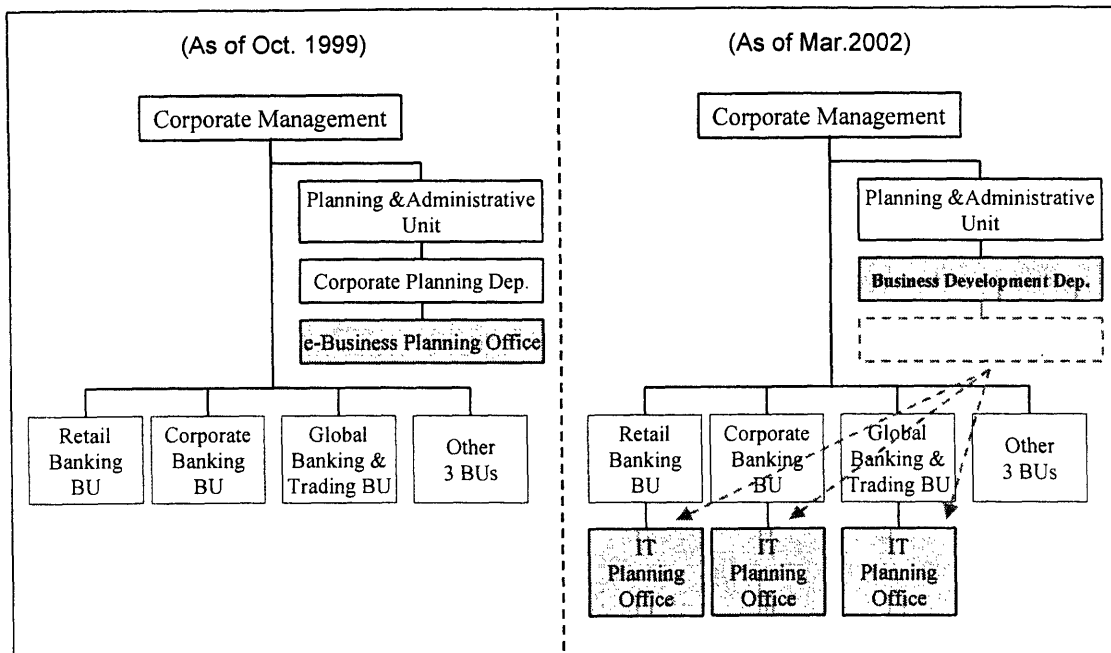
often negotiated with Corporate Planning Department by taking advantage of its position as a sub-office. Moreover, if a project involved building company-wide infrastructures and it was difficult to develop only in the business units, the e-Business Planning Office could organize a cross-sectional task force led by the Corporate Planning Department.

In 2002, in the process of merging with Tokai Bank and Toyo Trust Bank into UFJ Bank, the e-Business Planning Office migrated into its holding company, UFJ Holdings. The mission of the Office in the holding company is to pursue effective ways to utilize Internet technologies throughout the entire business of the new financial group.

In 2002, the Office was finally reorganized as the Business Development Office, focusing not just on projects related to the Internet but also on all business developments. At the same time, UFJ Bank spun off its system development function, which had been responsible for maintaining and developing its mainframe systems. In the process, the bank decided to utilize its own resources to connect customer needs with product developments by establishing an IT Planning Office in each business unit which had sufficient staff who were equipped with both technology and business development skills. In this way, the R&D functions at UFJ became completely decentralized into the business units (see Figure 5-6).

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<sup>14</sup> General information about UFJ's organization structure comes from its Annual Report ([www.ufj.co.jp](http://www.ufj.co.jp)). Its strategy for building R&D organizations is derived from research done by Bank of Tokyo-Mitsubishi, including some interviews by the author.



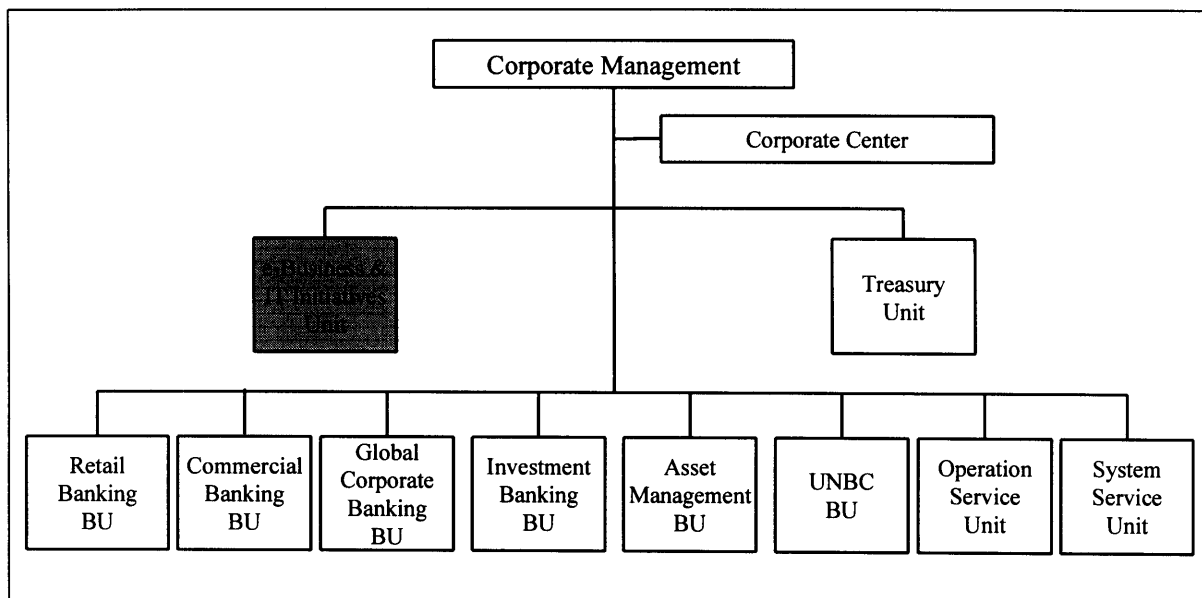
(Source: UFJ Holdings Annual Report 2000, 2003)

**Figure 5-6: R&D Organization in UFJ Bank**

### 5.3.3. The Bank of Tokyo-Mitsubishi<sup>15</sup>

The Bank of Tokyo-Mitsubishi (BTM) established an e-Business & IT Initiatives Unit as its centralized R&D unit in July 2000 during the process of shifting its management system to a business Unit system (see Figure 5-7). This organization was positioned parallel with eight other business units but remained completely independent from the others, reporting directly to top management. As a result, this R&D unit has the authority to allocate managerial resources, such as controlling human resources and budget.

<sup>15</sup> All information comes from BTM.



(Source: Mitsubishi Tokyo Financial Group Annual Report, 2003)

**Figure 5-7: R&D organization in the Bank of Tokyo-Mitsubishi**

This R&D unit is responsible for creating new business opportunities by utilizing the Internet technology, reengineering the bank's business processes, and improving customer services. Operating independently from the strategies of each business unit, the e-Business & IT Initiatives Unit is regarded as essential for promoting the bank's entire banking business as well as recruiting staff that have excellent knowledge and skills. From 2000 through 2003, the R&D expenses and new staff recruited as a result of the unit's own decisions are shown in Table 5-1.

	FY 2000	FY 2001	FY 2002	FY2003	FY 2004
<b>R&amp;D Expenses (JPY bn)</b> <b>(US\$ mn)</b>	7.8 (US\$70.9)	6.1 (US\$55.5)	5.5 (US\$50.0)	5.2 (US\$47.3)	10.1 (US\$91.8)
<b>Total Number of Staffs</b>	100	103	105	103	101
<b>New Employees</b>	2	3	5	1	-
<b>Staffs experinced in     commercial banking</b>	70	72	72	71	71
<b>Total Number of Projects</b>	106	113	121	115	109

(Source: The Bank of Tokyo-Mitsubishi)

**Table 5-1: Managerial Resources in the e-Business & IT Initiatives Unit**

Its R&D activities include not only proposing new products and services but also implementing and incubating them until the new business can stand on its own to resolve problems. The number of projects it has promoted has never been less than 100 since the unit was established in 2000, including projects such as small research into emerging technology, a large system development with more than US\$10 million investment, a consulting business for the bank's corporate clients that need useful ideas about how to deploy the Internet into their business, and so on.

On the other hand, there was also a drawback with BTM's R&D activities owing to its independence from the other business units. Early in the process of new service development, information about potential new services that could be developed by the R&D unit was not always communicated to the unit where that new service would be provided to customers. As a result, the bank sometimes introduced a new service which did not meet customer needs. Although the e-Business & IT Initiatives Unit had many people who were experienced at promoting corporate and retail banking by communicating with customers, it was not always easy to pick up on customer needs in a timely manner unless there as some communication with current customers. Also, from the standpoint of the other business units, keeping the R&D activities separate from them discouraged those units from improving

their familiarity and accumulating knowledge about new technologies like the Internet. These situations generated obstacles to communication when it came time to launch new products and services.

The most critical problem in BTM's R&D activities was how to communicate with customers in order to create new products and services that met their needs. Even though BTM did not have the knowledge to perform systematic and formal R&D activities (as discussed in Chapter 2), it could accumulate that know-how and then improve them in the process of its actual R&D performance.

In Chapter 6, I will assess the R&D activities at BTM, with specific focus on its process for applying the formal R&D methods I introduced in Chapter 2.

## **5.4. Summary**

In this chapter, I described historic and current R&D activities in the banking industry, focusing specifically on the organizational structure and authority granted. Due to the difficulty of performing systematic R&D in the service industry, banks were not able to organize their R&D activities like traditional, formal R&D. Even in U.S. banks, well-organized R&D activities were found only from the mid-1990s, and in Japanese banks, they were not established until the late 1990s.

Not only is it difficult to perform R&D activities in a service industry, but government regulations, which prohibited banks from extending into new business fields, also discouraged the banks from developing new products and services. However, the emerging Internet technology in the mid-1990s, combined with intensifying competition brought on by the new entry of Internet-only banks, made traditional banks decide to establish R&D organizations focused on effective ways to utilize the Internet.

The characteristics of R&D activities in the banking industry are outlined below:

- ◆ In the process of organizing R&D units, each bank had to decide whether to establish a centralized or decentralized organization. Most banks chose a centralized R&D department because of their

unfamiliarity with the Internet technology and the uncertainty of business oriented toward the Internet.

- ◆ Initially, many banks performed their R&D activities through a centralized R&D organization, but later they faced problems about how to truly reflect customer needs when developing new products and services. Most major banks reorganized their business units into decentralized units after recognizing that banks had improved their familiarity with the Internet technology and accumulated knowledge about it.
- ◆ When deciding whether to grant authority to allocate managerial resources such as budgeting and human resources, many Japanese banks did not allow the R&D units to do so. However, the role played by each R&D unit in squeezing out managerial resources varied from bank to bank. The e-business Planning Office in UFJ Bank played a major role in resource allocation for new product development, taking advantage of its position as a sub-office of the Corporate Planning Office which had the final authority. The e-Business & IT Initiatives Unit at BTM was given the authority to allocate resource money and staff needed to develop new products and services.
- ◆ R&D activities at BTM were unique because they were granted control of resource allocation. However, that generated another problem because the new products and services it developed did not meet customer needs because there was a lack of communication with the business unit as well as with the customers.
- ◆ In terms of how to gauge customer needs for new products, the Bank of America faced big challenges. The I&D Team faithfully employed the formal and empirical R&D methods used by manufacturing firms, and systematically applied that R&D method in the bank.
- ◆ Although BTM did not have a systematic R&D method like the Bank of America, the bank resolved its problems and accumulated know-how by creating services that met with customer needs through a trial-and-error process that was part of their R&D activities. I will analyze the

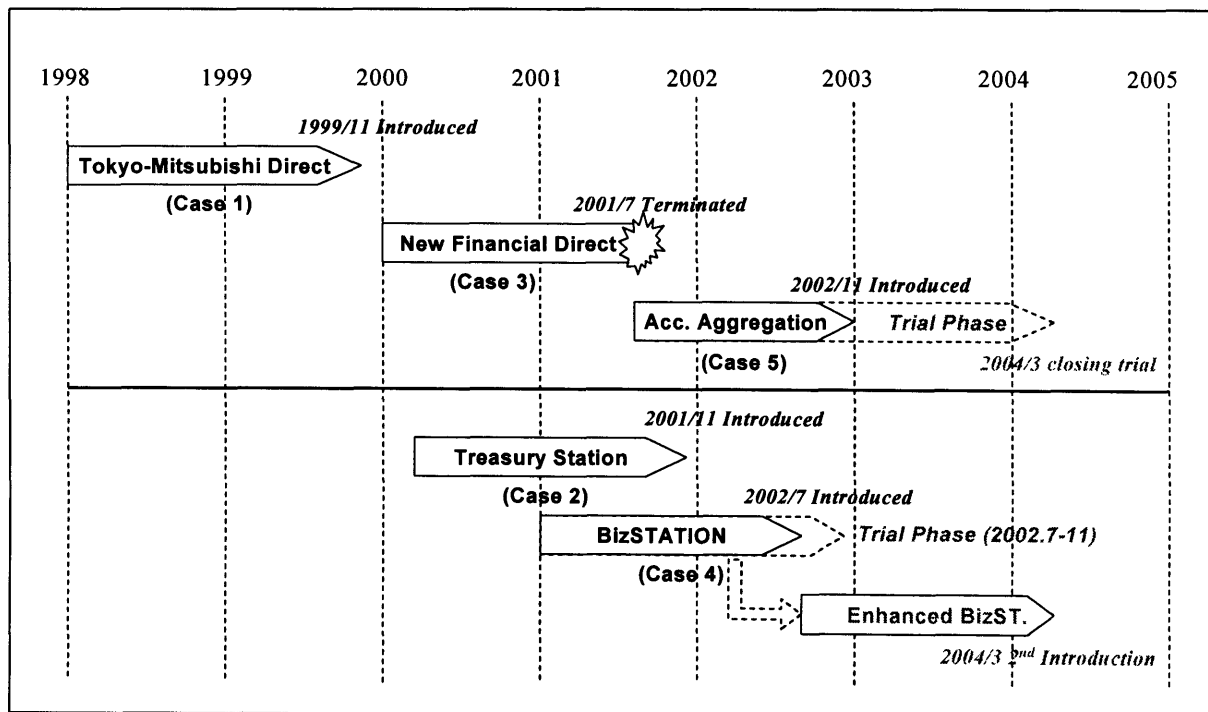
R&D process, focusing on actual BTM cases in which it developed new e-business opportunities, in the next chapter.



## CHAPTER 6

### Assessing the R&D Function in a Japanese Bank: Case Studies from the Bank of Tokyo-Mitsubishi

In this chapter, I have chosen several actual cases of new e-business development that occurred in the Bank of Tokyo-Mitsubishi,<sup>16</sup> and I will analyze them in terms of R&D processes through which the bank tried to reflect customer needs in its new products and services. The projects I picked can be broadly categorized into two business areas: retail or private banking, and corporate banking. I show the time-line of each R&D project in Figure 6-1.



(Source: The Bank of Tokyo-Mitsubishi)

Figure 6-1: Time-Line of the R&D Projects in Bank of Tokyo-Mitsubishi

<sup>16</sup> Information about the cases in this chapter comes from the e-Business & IT Initiatives Unit in BTM.

## **6.1. Case 1: Internet Banking Service**

### **6.1.1. Background**

The first R&D project to focus on the Internet at BTM was to develop an Internet banking service for individual customers. Introduced in November 1999, this project was proposed during the run-up to establishing the e-Business & IT Initiatives Unit, and was promoted by the taskforce whose members would form the core of that unit later. At the time, it was early in the diffusion of the Internet, and many companies were competing to generate new businesses using the Internet—the so-called B2C and B2B.

As discussed at Chapter 4, the Japanese banking industry also focused on developing Internet banking services for retail customers as the first step to applying the technology in its banking business. Major Japanese banks, such as Sumitomo, Sanwa, and Fuji, had already launched such services. However, BTM did not have the knowledge or organization to develop these new services, and the Retail Business Department was reluctant to invest in it due to uncertainties about whether the business would affect the bank's profits and its existing businesses. This resulted in a delay before the bank began to respond to its competitors' moves. Finally, in mid-1998 BTM began to develop its service, and in November 1999, the bank introduced "Tokyo-Mitsubishi Direct" (TMD), its first Internet service (see < [www.directbtm.co.jp](http://www.directbtm.co.jp) >).

### **6.1.2. Customer Needs**

The most critical issues for developing an Internet banking service was the lack of technological knowledge and business experience. Moreover, the bank did not grasp that there was any customer need or desire for such service. As noted in Chapter 4, since the bank already had a System Development Department which focused solely on mainframe architecture, it did not have the capability to develop any type of Internet banking service.

The decision was made to depart from the customary in-house development which BTM had always done, and to employ Hewlett Packard and Hitachi to develop an Internet service. This meant that basically the process to understand the customers' need or desire for the service began from zero. Fortunately, since some competitors had already introduced their own services, BTM team members could use their service by acting as a customer and thus collect information. Through numerous inquiring about other competitors' services, BTM gathered sufficient information that it decided to develop its own service equipped with basic functions, such as checking balances, downloading transaction details, transferring money, and providing useful information to customers. The bank made it a priority to develop those basic functions of Internet banking rather than going beyond the basic functions because going further would require too much time and money trying to grasp what services customers really wanted. BTM also decided to add functions desired by customers based on continuing inquiries after the service was introduced.

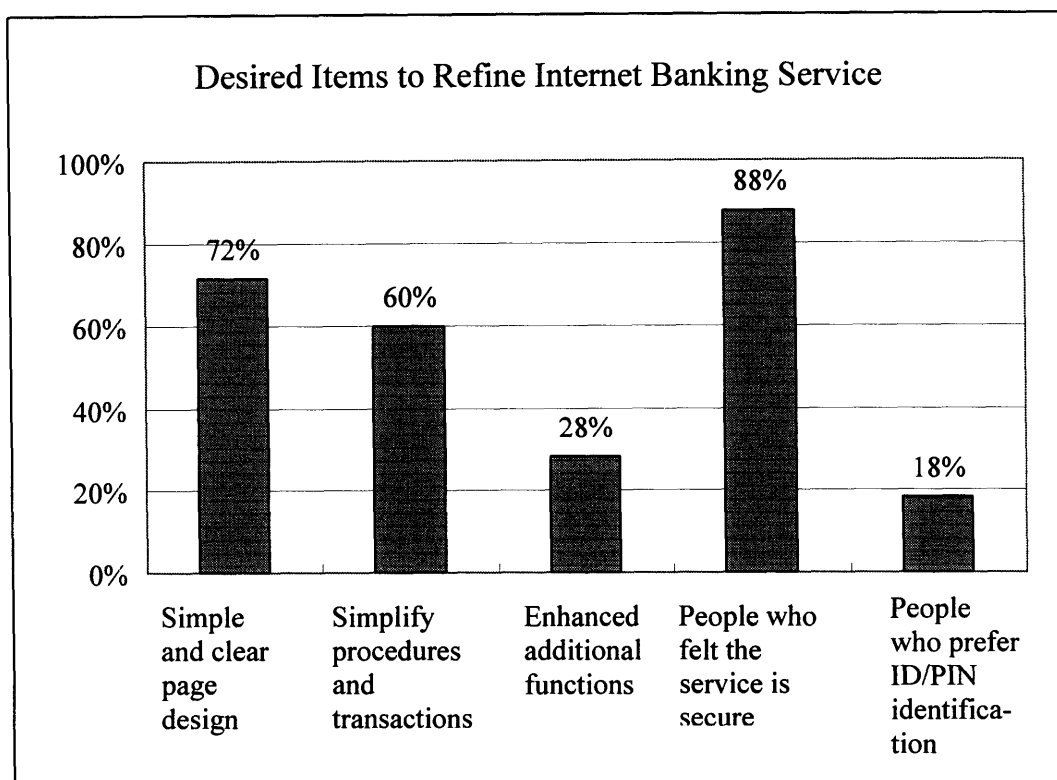
### **6.1.3. Usability vs. Security**

BTM put the most emphasis on security issues during the development process. Since customers deal with financial transactions and information over the Internet, BTM paid attention to keeping the service more secure than other Internet services. In order to identify whether the person accessing the account was the legitimate account holder, BTM embedded a challenge-response method using a random table only the customer would hold—in addition to entering their user ID and password, as was common with other competing services. Moreover, the bank adopted a 128-bit Secure Socket Layer (SSL) for all transactions, the first bank to utilize this device.

However, the team also recognized in the early stages that providing a higher level of security might also make the service more difficult to use. The challenge-response method was obviously more troublesome than just entering a user ID and password. Worse, the user had to carry the random table with him/her, which made the service less mobile. The team needed to resolve this need for both security and usability. To resolve this problem, the team conducted usability research among Internet

banking users. It developed a prototype which provided testers with just a screenshot of the service being planned, and they tested about 50 men and women of varying ages and occupations.<sup>17</sup>

The results of the research indicated that customers preferred high-level security procedures even if they were complicated (see Figure 6-2). The research also found that customers desired simple and clear page designs that were user-friendly, and they did not complain about complicated security procedures.



(Source: The Bank of Tokyo-Mitsubishi)

**Figure 6-2: The Result of Usability research for the Internet Banking Service**

Based on that research, BTM modified its service several times, and then introduced “Tokyo-Mitsubishi Direct” (TMD) in 1999. This new service and its mobile banking service (established in response to the growing mobile Internet market and telephone banking services) enabled

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<sup>17</sup> The research was outsourced rather than conducted by BTM team members in order to avoid skewing testers’ responses because of a reluctance to express their true opinions about the service.

non-Internet users to enjoy the convenience of direct banking service in a single package in which users could make use of all three services. TMD obtained one million users in only six months after it was launched, and it becomes the largest Japanese Internet financial service—despite the two-and-a-half-year delay in its introduction.

After introducing it, the bank tried to improve the services and provide enhanced additional functions. For example, in 2001, BTM introduced “e-Payment,” an Internet debit service. Furthermore, foreign currency deposits and consumer loans, products that customers strongly wanted and which make a major contribution to the bank’s profits, were added later. Today, BTM continues to refine and enhance these services.

TMD was already incubated in the retail business unit. The retail business unit established a Direct Banking Department which was assigned not only to operate the TMD service but also to develop new functions using its own managerial resources. The R&D unit, e-Business & IT Initiatives, still continues to support new service development that evolves out of new technologies.

## **6.2. Case 2: Cash Management Service**

### **6.2.1. Background**

In November 2001, BTM introduced “Treasury Station,”<sup>18</sup> a service that enables corporate clients to improve internal cash efficiency. It is a kind of cash management service in which the controlling company can check daily cash flows run through the corporate group and manage them. If a subsidiary comes up short of cash, the controlling firm can transfer money from another subsidiary that has enough cash to accommodate the transfer. If a subsidiary has enough cash to invest, the parent firm could combine them and invest in some short-term investment product. This was the first Internet service for corporate clients, and established in response to specific customer needs.

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<sup>18</sup> Information about Treasury Station can be found at <[www.btm.co.jp/kigyo](http://www.btm.co.jp/kigyo)>.

In March 2000, Japanese accounting standards changed, forcing companies to report their financial statements by using consolidated balance sheets. Financial officers in large companies were very concerned about how to improve cash efficiency in their corporate groups.

### **6.2.2. The First Client as “Lead User”**

To achieving this purpose ideally, three factors were crucial:

1. Develop an IT infrastructure in the corporate client that would enable the controlling firm to understand daily cash flows in a timely manner;
2. Develop banking tools that would enable money transfers among corporate group entities based on the information it understood;
3. Develop IT interfaces that simultaneously connect the financial transactions run through bank accounts with the accounting procedures.

Most corporate clients expected BTM to propose schemes that would help them achieve those goals. But from the viewpoint of the banking business, providing such a scheme was a critical problem. Improving their clients' cash efficiency would offset bank loans against bank deposits and result in decreasing the bank's earnings from interest. On the other hand, providing a new scheme that customers strongly desired would generate new business opportunities to seize each new client's cash flows from other competing banks. Whether BTM's profits would increase or decrease depended on the client's account balances.

Therefore, BTM developed a new service that was customized for a specific corporate client that had cash-flow problems that need major improvement; the service was not offered as a mass product in the beginning. That single corporate client had 300 entities with daily cash flows that needed to be managed, including subsidiaries, branch offices, and factories, and the client was strongly desirous of using a scheme that would improve its financial balance sheet. This client and its situation are an excellent illustration of the classic “lead user” concept.

The project team consisted of 10 members in the e-Business & IT Initiatives Unit, who studied detailed schemes of the technology needed, accounting rules involved, and the client's operations. Team members were sent to reside at the client company for several weeks and most of the study was done there. Especially when considering a proposal for the operating scheme, the team needed to understand the daily accounting workflows in the client's accounting department. They often discussed with accountants the appropriateness of accounting procedures to be done through the new scheme in order to avoid misinterpreting accounting rules.

In terms of technology development, the team decided to utilize an existing widespread electronic banking (EB) service for the money transfer process due to budget constraints while this new service relied on the Internet technology.

Finally, in November 2001, the team introduced "Treasury Station" as a customized service only for that corporate client. Anxiety that the new service would result in a decline of BTM's revenues by decreasing both deposits and loans was soon dispelled. In fact, the new service generated more than ¥10 million (about US\$80,000) in revenues due to increased charges for money transfers and balances of investment products caused by the client's consolidation of both inflow and outflow of money with several banks.

### **6.2.3. Expanding Business**

Although Treasury Station was introduced as a customized service for only one corporate client that had an urgent need to resolve a problem, the bank then needed to consider whether to provide the same service to other clients who might have similar need for such a service. Since there was some possibility that the new service might cause the bank to lose revenue, depending on trading conditions between the bank and the client, the bank did not announce the new service and also did not promote it at all. However, high commendations from the client itself soon made their way through the market. Within the communities of CFOs and financial managers, the information that BTM had developed

such a solution spread quickly. The bank had no alternative but to provide it to other clients because it was clear that competitors would soon imitate the service.

The most important issue in the process of expanding the business was to commoditize the customized service. By that time, the team had accumulated the know-how to develop each aspect of the service and it had produced manuals about them. It was almost possible to promote the service based on this manual, although the scheme was slightly different for each company's environment. The bank found it could establish the development system and complete all the development needed for the expanded service using only two people, whereas ten people had been needed for the original development. In the end, the bank sold the new service to 30 large corporate clients in the first year after it was introduced.

#### **6.2.4. Refining the Product**

By expanding the new service, the bank also paid great attention to refining the service. In collaboration with the client company that first used Treasury Station—the lead user—the bank collected information that the client wanted to refine in its daily operations and transactions. Periodically (once every six months) improvement of some functions was given high priority. The requests for improvement ranged from a tiny design change to a complicated functional enhancement, and the costs required for make those improvements varied from case to case. Thus, deciding which requests would be approved depended on the budget of the R&D unit, the e-Business & IT Initiatives Unit. Considering that competitors had already started to introduce similar services, BTM realized the importance of continuing refinements to the service. The client's requests provided were a source of helpful information that enabled BTM to keep the product competitive.



## **6.3. Case 3: Enhanced Internet Private Banking Service**

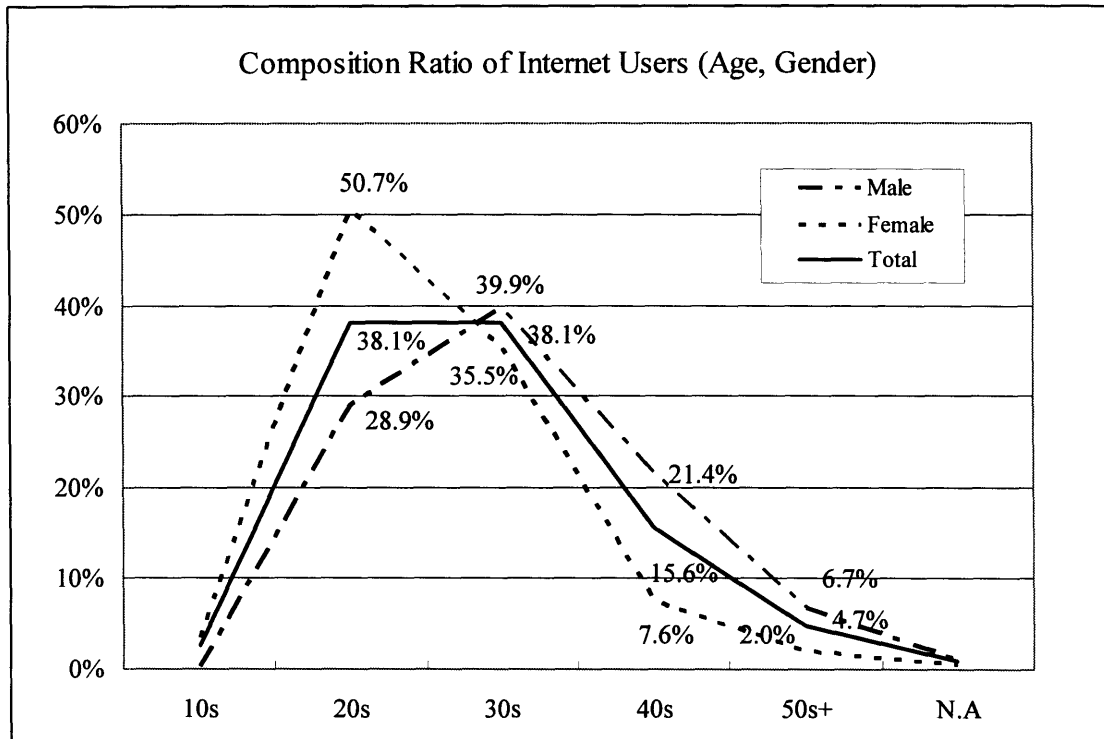
### **6.3.1. Background**

After BTM introduced Tokyo-Mitsubishi Direct, an Internet banking service for individual customers in 1999, it then established in July 2000 the e-Business & IT Initiatives Unit, which began to discuss a more innovative Internet banking service which would provide new services enabled only by Internet technology. This was well beyond the TMD service which just offered existing financial transactions through the Internet. The bank named this pilot “New Financial Direct Service” (New Direct) and established the New Financial Direct Office (New Direct Office), a new organization charged with developing and launching this new product. The New Direct Office was allocated about 30 people and given a budget of more than ¥10 billion (about US\$90 million). However, the project was suspended in July 2001 because of it was deemed infeasible.

Although the introduction of Internet banking services contributed to improving both customer convenience and bank cost efficiency of transactions, the e-Business & IT Initiatives Unit responsible for creating new e-business opportunities utilizing the Internet had to decide whether the bank should invest more money in such a new technology that it would strongly rely on if it would sell more profitable products, such as mutual funds, consumer loans, and savings insurance through the Internet. The target customers for such highly profitable financial products would be affluent individuals with a certain level of financial assets or cash flows sufficient to invest in such products. At the time, BTM did not have a concrete scheme for encouraging this target group to buy these products. Therefore, proposing such a scheme would be critical to the bank’s retail business.

The fact that the diffusion of the Internet among people in their forties was no lower than the average (see Figure 6-3), the unit made an assumption that providing financial products through the Internet would appeal to affluent customers, especially businessmen in their forties who had rich cash flows, and who might be inclined to buy these profitable products through the Internet. Based on that awareness, BTM decided to organize the New Financial Direct project which would be responsible for

introducing a completely new Internet banking service that could provide private banking know-how, such as a financial advisor, portfolio simulation, etc., and could sell profitable products such as high-interest deposits or mutual funds or low-interest consumer loans to affluent individual customers.



(Source: White Paper Information & Communications in Japan, 2000)

**Figure 6-3: Diffusion of the Internet in Japan, as of 1999**

### 6.3.2. Brainstorming

What financial service could be provided only via the Internet? The New Direct Office established the “Attara-Iina” Team (meaning, in Japanese, “I wish there were something more convenient”), an informal organization charged with finding an answer to that critical question. The team often brainstormed about what services were needed in our daily life, without considering existing financial services. However, this brainstorming did not produce any specific product that could be considered by the project. Since the team members consisted only of staff from the e-Business & IT Initiatives Unit, and did not include anyone from the Retail Banking Unit, or anyone who worked at a

branch office, or any customers, most of the ideas generated by the team were in the narrow range of a banker's stereotypical concept of what was needed.

On the other hand, system development needed to move forward quickly. Financial services via the Internet were based on constructing system infrastructure that included a flexible product design. This meant it was necessary to develop another banking system separate from the existing mainframe with which the bank could provide quick and flexible financial services featured on the Internet. This project also required a heavy workload and expensive costs, just as though they were establishing a new Internet-only bank for deployment.

Early in 2001, although the team did not have any concrete functions that could be provided through a new Internet service, BTM started to develop a new banking system that enabled customers to make basic transactions such as deposits and loans. In spite of developing such basic functions, the costs piled up, reaching about ¥10 billion (about US\$90 million). Because it was impossible for the bank to promote it using in-house development, BTM utilized the resources of system suppliers like IBM and Information Services International-Dentsu, Ltd. (ISID). Most project members were obliged to spend enormous quantities of time on system development and process management.

At the time, the Attara-Iina team proposed new Internet functions, such as a web-based financial advisory service, a web-based financial agent service, and so on, but its technical and business feasibility were not examined well. Charged with finding a killer content for the New Financial Direct Service, and finding only a system that provided basic functions, the idea suddenly began to have wings.

### **6.3.3. Troubles**

Although a year had elapsed since the project began, the team still could not prove its assumption that providing financial products through the Internet would be interesting to affluent customers, and they might consider buying such products through via the Internet, the team could not develop a clear business model that would achieving that goal. Simultaneously, the system

development, by which the bank would offer timely and quick basic financial services, made substantial progress. The Retail Business Unit began to worry about what services the bank would offer through the new service, what differences there were from existing services, the effects on the branch offices, and whether affluent customers targeted by the new service really existed and would buy such investment products via the Internet.

Then, during the process of drafting a budget for the second quarter of 2001, arguments erupted at BTM about the suitability and necessity of a New Financial Direct Service. In one of time's ironic little revenges, the Internet bubble collapsed about that time, and the Internet-driven business model could go no further than just an idea, in terms of feasibility and market needs—and this project was regarded in the same way.

Another problem was the bank's decision to strictly limit investments to only those that would contribute quickly to the bank's revenues in order to squeeze out more funds to write off its non-performing loans.

New Financial Direct was obviously already uncertain as a continuing investment, and it was finally terminated in July 2001. Although the project had already cost more than ¥1 billion (about US\$9 million), the judgment to terminate the project was more reasonable than the expenses that would have to be outlayed in the next step of the project.

The critical questions — to what customers could the bank provide enhanced private banking service through the Internet; what function or service the bank could provide; and how the bank could do either of those — these were left unanswered. Throughout the project, no market research or communication with real customers was ever done. Although the project was cut off, the bank decided to carry on the activities that would determine answers to those questions. It assigned two people who had been members of the New Financial Direct project to find the answer within six months.

## 6.4. Case 4: Internet Corporate Banking Service

### 6.4.1. Background

In July 2002, BTM introduced “BizSTATION,” an Internet corporate banking service (see [www.btm.co.jp/BizSTATION](http://www.btm.co.jp/BizSTATION)). For individual customers, Japanese banks had already launched Internet banking services in the late 1990s, however, the banks hesitated to introduce service for corporate clients for the following reasons.

- First, since Japanese banks already provided electronic banking (EB) services, financial transactions between banks and clients had already grown highly efficient. So customer demands to further improve their financial transactions were relatively low.
- Second, the development of a similar service for corporate use might be more complicated than for individual use. For example, in order to ensure security, it would require a multilayered security scheme, such as authority for accessing accounts, who would use the functions, who would transfer money, and a function to check access history.
- Finally, as a result of the second factor, it would need to spend huge amounts of money to achieving all those functions.

However, as the Internet penetrated further into the processes of corporate business and office workers began to realize the conveniences of the Internet, they began to complain about the inconvenience of existing EB services that were not Internet-oriented. From the bank’s perspective, a switch from EB to a web-based service would definitely bring many benefits. For example, because the existing EB service required the installation of application software into the clients’ PCs, banks then had to physically maintain that software and distribute CD-ROMs whenever there were upgrades, improvements, or new information necessary for the transactions. In late 2000, as a result of several large mergers and consolidations of bank branch offices, the banks were forced on several occasions to transfer the bank code and branch code information needed for money transfers, and the cost of those tasks was more than ¥100 million (about US\$9 million). If the bank could provide the same information

as a web-based service, it would reduce those costs because there would be no need to maintain software on the clients' PCs. Furthermore, branch officers were eager to introduce the service because customers already expected that banks would launch a web-based banking service, so new customers hesitated to adopt existing EB services.

Faced with these considerations, BTM finally started to develop a web-based banking service for its corporate clients in the beginning of 2001.

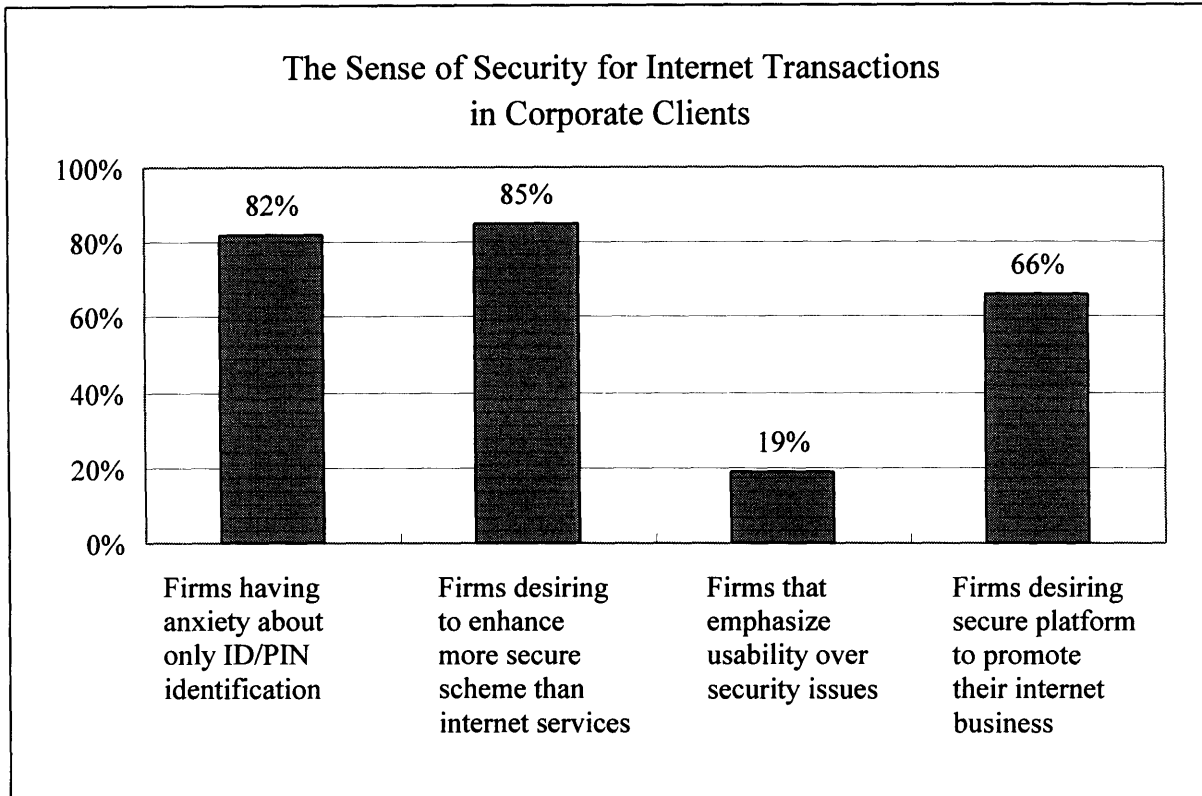
#### **6.4.2. Development Plan**

A project team of about 20 people was organized. In the beginning, ideas about a corporate Internet banking service covered a wide range of business areas, and went beyond a transition of EB service to web-based service. Not only were basic EB functions provided (checking balances, providing details of transactions, transferring money) new functions were also proposed that would enhance "BizSTATION." For example, the team proposed a communication function that enabled both the bank and the client to achieve an efficient exchange of information between them. It also devised the concept of a new service that would become a B2B gateway with a settlement function for the clients' Internet business.

Realizing that it would take considerable amounts of both time and money to realize all those functions simultaneously, BTM decided to develop and introduce basic functions similar to the classic EB service first, then seek customer input for potential additional functions, and consider adding them later.

The most important issue in development was how to ensure secure transactions, similar to the service provided to individual customers, especially whether a simple user ID and password would be secure enough for corporate clients. However, the customers' sense of security was clearer than the

bank expected. According to its customer research into security issues,<sup>19</sup> more than 80% of respondents were anxious about identification that only requested a user ID and password (see Figure 6-4).



(Source: The Bank of Tokyo-Mitsubishi)

**Figure 6-4: Research for the Security Issues among Corporate Clients**

Based on this result, BTM decided to employ PKI Services, provided by VeriSign Inc., a U.S.-based security solutions provider. This new service would deliver electronic certification to the clients and require them to show it when they entered the service. Moreover, the bank could build detail authority settings into the service and it paid great attention to security issues inside the clients as well. By enhancing these high-level security functions, “BizSTATION” could provide a secure communication tool. Using the message box inside the secured service, both the client and the bank

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<sup>19</sup> Customer research was done with questionnaires. For respondents who were uncomfortable with

could even exchange confidential information with each other (a service named “Secure Message”). This function responded to customer needs, which appeared in the customer research, which stated that 90% of respondents worried about security of Internet communications for their business use. And the bank would also benefit from the Secure Message service. Because most branch officers in charge of corporate clients spent much time collecting information via physical contact with their clients, minimizing the time spent for that purpose meant it would be possible to commit more time to promoting business and improving their sales forces. In order to achieve rationalization early, the bank decided to offer “Secure Message” as the first step of development beyond the basic functions already existing in EB service.

#### **6.4.3. Business Study Team**

When the development of BizSTATION began, there were not enough human resources to promote this project because the e-Business & IT Initiatives Unit had concentrated its resources on the “New Financial Direct” project. Therefore, the unit decided to concentrate its human resources on the physical system development required for introducing the new service, and did not put manpower into activities to determine customer needs. When the bank began to examine what customers would receive the service, and how it would deliver the service, it was late 2001. The unit organized a Business Study Team (BS Team) consisting of five people from the New Direct project which had just been terminated. The BS Team soon developed demonstration software that imitated PC screen shots of the new service. Using this, they explained the functions and features of the service to more than 200 corporate clients within a month, and accumulated their feedback. However, the feedback could not be incorporated into the system because it too late to modify it. For example, the BS Team found some procedures that were mismatched with clients’ business procedures, and they suggested some modifications. However, since the modifications would cause a one-month delay in introducing the service and additional expense, the

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questionnaires were interviewed by team members.



unit decided not to make the modifications. The BS Team realized then that the gaps between ideas from the bank and procedures suggested/demanded by customers could be discovered only by asking customers.

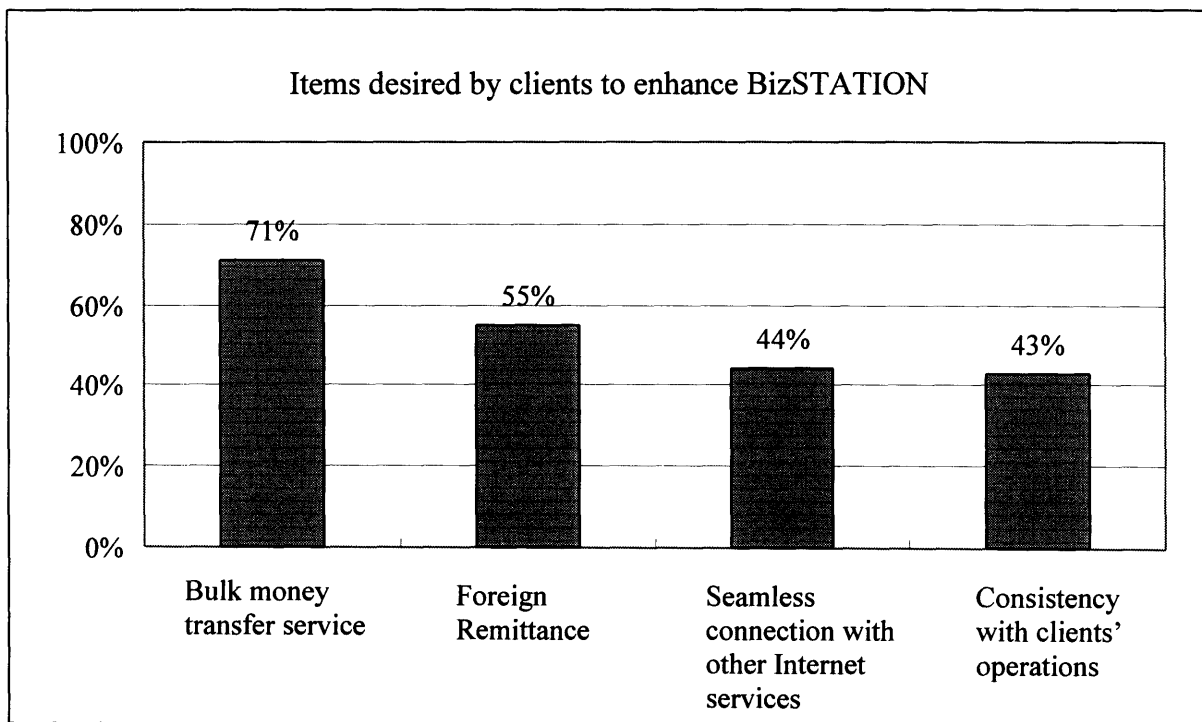
In terms of target customers, the BS Team planned a marketing strategy in which the bank would focus on small business clients rather than large corporate clients for the first version of the new product. In the first version, since only existing EB functions were included in the new service, the functions needed by large companies, such as a bulk money transfer service for payroll payments, received a low priority. The BS Team expected that large companies would not be satisfied with the first-version product.

After introducing the first version product, the bank decided to add enhanced functions that were strongly requested by corporate customers, such as the bulk money transfer function. Then they began to promote sales of the service to large corporate clients. In terms of the “Secure Message” service, the bank was still uncertain what information would be exchanged through the service. The team generated the idea that the bank could provide a variety of advisory services, such as a financing advisor, trading advisor, accounting advisor, etc. However, most customers had no idea how to use these functions before actually trying to use them. Therefore, BTM also decided to rethink how to extend the “Secure Message” function to an actual service after looking at the ways customers might use it.

#### **6.4.4. Experimental Period**

BTM launched “BizSTATION” in July 2002, but sales did not immediately expand. The bank set up an experimental period of four months with more than 300 companies, most of which were firms the Business Study Team had contacted when it had conducted earlier research into customer preferences. Although the objective of the experimental period was primarily to examine the bank’s operational flows concerning the new service, the BS Team continued to accumulate feedback from the monitor companies.

When there were no critical troubles during the experimental period, BTM finally decided to expand sales of the service in November 2002. A variety of customer needs were accumulated during the trial period, as shown in Figure 6-5. Because customers were strongly desirous of having the enhanced functions that had been given a low priority during development of the first version, BTM decided to develop and enhance those functions in the second version. Moreover, as there were many requests to connect seamlessly with other Internet services due to the strong credibility of the service's security, the bank also decided to employ the "Single Sign On" technology which allows automatic log-in by retaining the user ID and password within the service. After that, the product migrated to the second phase of development.



(Source: The Bank of Tokyo-Mitsubishi)

**Figure 6-5: Customer Needs for the Corporate Internet banking service**

## **6.5. Case 5: Account Aggregation Service**

### **6.5.1. Background**

After the New Financial Direct project terminated in July 2001, BTM continued to study what functions the bank would offer, using which technology, and for what customers. Based on its research, in November 2002 BTM introduced, on a trial basis, its new account service called “Tokyo-Mitsubishi Wealth Palette” (WP), and today it is currently preparing the product for a general rollout to the bank’s most affluent customers (see [www.btm.co.jp/wp](http://www.btm.co.jp/wp)). Throughout its three-year experience with various R&D activities, the e-Business & IT Initiatives Unit of BTM (its R&D unit) continued to accumulate know-how and to promote this project using some of the formal R&D methods that were discussed in Chapter 2.

The members of the study team researched two market sectors—technologies and customers. In terms of Internet technology, they paid specific attention to one, “account aggregation,” which had already attracted several major U.S. banks.

Account aggregation (AA) is an Internet-based service that offers account activity and other information about multiple financial accounts all together on one PC screen. While many U.S. have already begun to utilize this service, Japanese banks were hesitant to start too quickly, for two reasons. First was an industry concern about how to access and utilize data from the websites of competing financial institutions. In the U.S. this issue was settled fairly rapidly when, in March 2000, First Union dropped a lawsuit it had brought against Pay Trust targeting the aggregation feature of that firm’s bill management service. Financial institutions in Japan, however, have taken a more cautious approach. Financial services firms in Japan only aggregate accounts from institutions that at least tacitly agree to have their data used in this way. Although financial institutions have been aware of account aggregation since its inception, it has taken several years for the practice to gain industry recognition and authorization from Japan’s Financial Services Agency (FSA).

The second factor was market timing. Japanese financial institutions were not immediately convinced of the market potential of account aggregation, so they took a wait-and-see attitude, monitoring the growth of such services in other markets, particularly the U.S., for some time before deciding to commit their resources and reputations to offering the service themselves. The first movers in Japan were securities firms, which are generally less conservative about aggressive strategies than banks. Monex Inc., an Internet-only brokerage, led the way, introducing its account aggregation service in September 2001. Monex was followed by Japan's leading brokerage, Nomura Securities, and then by E\*TRADE Japan. Then in the middle of 2002, a spate of new account aggregation services were introduced by another online brokerage Nikko Beans (a subsidiary of Nikko Cordial Securities, Japan's second largest securities firm), also by the Internet-only bank Japan Net Bank, by non-bank Toyota Motor Corporation, and by the general-service web portal Goo (see Table 6-1).

Service Provider	Solution Provider	Launched
<b>Banks</b>		
The Bank of Tokyo-Mitsubishi	Account One (Teknowledge)	November, 2002
Japan Net Bank	NTT East	November, 2002
<b>Brokarages</b>		
E*TRADE Japan	Tech Tank (Softgram)	February, 2002
Monex	Tarang	September, 2001
Nikko Beans	Account One (Teknowledge)	September, 2002
Nomura Securities	Nomura Research Institute	October, 2001
<b>Credit Cards</b>		
Credit Saison	Tech Tank (Softgram)	March, 2003
UFJ Card	NTT Data	September, 2003
<b>Telecom</b>		
NTT DoCoMo	Tarang	May, 2003
<b>Portals</b>		
Goo	NTT East	December, 2002
KDDI Dion	Account One (Teknowledge)	September, 2003
Toyota Motor Corporation G-Book	Account One (Teknowledge)	December, 2002
Yahoo! Japan	Tech Tank (Softgram)	December, 2002

(Source: The Bank of Tokyo-Mitsubishi)

**Table 6-1: Account Aggregation Services in Japan**

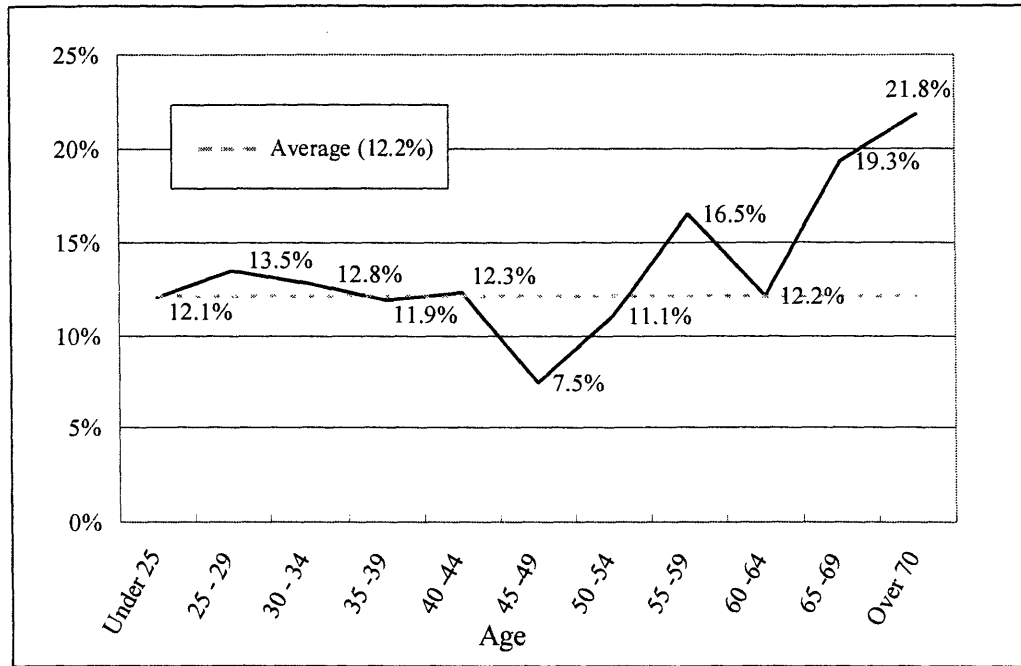
### **6.5.2. Learning From Failure**

As of July 2001, when the study team took over pursuing innovative Internet financial services from the New Financial Direct project that had been cancelled, many Japanese financial firms, especially banks, adopted a wait-and-see attitude toward the AA service. However, the team's concern was deep and serious due to its expectation that this service had great potential for promoting the private banking business.

In the process of studying the private banking business, the team often communicated with the bank's Retail Banking Business Unit, so the team was aware that the Japanese private banking business would likely increase due to some additional structure changes in the financial markets. This was what the New Financial Direct Team could not do and that ultimately led the project to failure.

The team identified several reasons why the private banking business was likely to take off. First, the composition of Japan's population is becoming increasingly tilted toward older citizens. Since traditionally, older people have a higher rate of savings, the shift toward an aging society means that financial service providers should be prepared with business opportunities that enable them to take advantage of this demographic shift (see Figure 6-6). Second, and somewhat related to the first, the Japanese pension system is just now migrating to the concept of 401k savings plans. This requires Japanese people to invest their pension funds by themselves, so they will undoubtedly make full use of investment products that will complement their own skill.

In collaboration with the Retail Banking Unit, the team made it clear what customers should be targeted by a new service. BTM had already offered a number of products and services aimed at capturing high-profit customers who were segmented as high-net-worth individuals and the affluent in the mass market. Services for those customers included inheritance and trust services, foreign currency deposit accounts, mutual funds, and insurance offerings. For mass-market retail customers, high-margin products include unsecured loans and card-based credit lines (see Table 6-2).



(Source: Statistics Bureau)

Note: Based on the National Survey of Family Income and Expenditure in 1999

**Figure 6-6: Ratio of Savings to Disposable Income (by Age Group)**

Segment	Investable Assets	Characteristics	Primary Products
<b>Affluent</b>	Over 100MN (JPY)	Investment wealth	-Private banking -Inheritance services -Trust services
<b>Mass Affluent</b>	10MN-100MN (JPY)	Income flow wealth	-Foreign currency deposits -Trust services -Insurance -Mutual funds
<b>Mass Retail</b>	Under 10 MN (JPY)	Salaried workers	-Home loans -Unsecured loans -Credit line card -401k

(Source: The Bank of Tokyo-Mitsubishi)

**Table 6-2: BTM's Customer Segmentation (Retail Banking)**

At the time, the Retail Banking Unit had strongly emphasized financial planning and wealth management services for the high-net-worth and affluent mass-market customers. To serve these customers, the bank maintained financial advisors in its branch offices. Financial planners also made field calls to provide individual consulting to retail customers in an effort to attract and serve high-profit customers. The team approached the concept of account aggregation with the expectation that it could attract and retain additional profitable customers by offering a more convenient private banking service, such as a web-based portfolio simulation and a financial advisory service.

However, the team remained cautious about rushing into implementing AA because according to the team's research, the same service in the U.S. had largely missed its potential as a value-added service. Moreover, BTM had to resolve the institutional problem as to whether the concept behind AA would be accepted by other financial service firms, and by Japan's government regulators. The team knew it would take some time for a consensus in this area to emerge.

### **6.5.3. Identifying the Customers**

The team held many discussions about what customers the bank should focus on. In concentrating on a specific customer segment for AA, BTM's emphasis was not on attracting new customers; the bank has plenty of mass retail customers, and enjoys continued growth as customers leave other banks and switch to BTM. Instead, the team decided to pursue AA as a way to provide additional services to high-net-worth and affluent mass-market customers in order to improve the profitability of these customers as well as enhance retention. Furthermore, at the very high end of the scale, account aggregation would not be targeted at ultra-high-net-worth clients, because these customers are already offered personalized banking services through BTM's private banking arm.

Throughout the process of customer segmentation, both the team members and the Retail Banking Unit sought to reach common answers about using AA in the retail banking business, who among its affluent mass-market segment might be potential future customers for a private banking business, and whether AA could meet these customers' needs.

The group of affluent mass-market customers that were identified was regarded as “Lead Users” who would be targeted for a trial of the private banking business—even though the bank did not consciously understand that concept. Until then, it had not realized the solution for how it should promote the private banking business to that promising market, especially what customers’ need from financial institutions such as banks; how they could understand those needs; and would the real customers be willing to pay for private banking services. However, the team did know that affluent mass-market customers were more sensitive to the performance of their investments and therefore might be willing to pay for additional investment know-how that would enable them to make good decisions regarding their investment portfolio. Eventually, BTM concluded that it would develop the AA service for its affluent mass-market customers even though most other banks had not yet invested in the idea.

#### **6.5.4. Implementation**

In implementing the AA service, BTM decided to use an application service provider (ASP) rather than an in-house system. The main reason for going the ASP route was the lower cost of implementation and ongoing maintenance. BTM reasoned that AA was still a largely untested service in the Japanese banking market, and it was too early to tell how popular the service would be with its customers, or whether the ambitious goals of using AA as a basis for financial advice and cross-selling would succeed. Because of these uncertainties, BTM wanted to keep costs down for what it saw as still an experimental service, and in this context the ASP model made the most sense.

In particular, scripting for AA is a time-consuming, labor-intensive process. Routines for logging into and scraping information from target accounts must be rewritten whenever the target institution changes the relevant features of its website. Keeping up with these changes requires daily monitoring and re-scripting as necessary, a task that BTM was not eager to take on in-house.



The ASP approach meant that Account One, an application service provider,<sup>20</sup> would be responsible for these and other maintenance tasks. Due to the decision to handle AA using an ASP, the implementation was essentially an outsourcing operation, and the bank could allocate its internal resources to focus on business-line issues rather than technology. This included negotiations to gain approval of the AA concept from Japan's FSA, talks with firms that host aggregated accounts, strategic issues such as concept development and marketing, and results assessment. They also concentrated on achieving ease of use. The implementation took six months, including a period of beta testing carried out by BTM's own employees.<sup>21</sup> The bank made sure the service was fully developed and reliable before releasing it to its customers.

#### **6.5.5. Launching the Service on a Trial Basis**

In addition to communicating the process clearly with the Retail Banking Unit, understanding the market and customers, and allocating resources to focus on the business line rather than system development, BTM performed prototyping of the AA service as another aspect of BTM's R&D methodology. However, the prototyping was conducted as a real service for real customers, not in a laboratory.

The bank introduced its AA service, "Tokyo-Mitsubishi Wealth Palette" (WP), on a pilot basis, without any public announcements, in November 2002 (see the service features in Table 6-3 and the concept in Figure 6-7). Initially, the bank offered the service to a selected portion of its affluent mass-market customers. This initial test phase, which BTM expected to run through March 2004, was limited to 5,000 users.

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<sup>20</sup> Account One was acquired by Information Services International-Dentsu (ISID) in October 2003. Details can be found at its website <[www.accountone.com](http://www.accountone.com)>.

<sup>21</sup> The research was conducted by way of questionnaires.

The team targeted affluent mass-market customers with high account balances, because customers with low balances were not likely to become active users of the service even if they signed up for it. The team also was aware that some customers might not understand the service, might find it difficult to use, or might have concerns about security and privacy. Therefore, the bank initially targeted active users of “Tokyo-Mitsubishi Direct,” the bank’s Internet banking service. These were customers who were more apt to be comfortable with the service concept and to become active users.

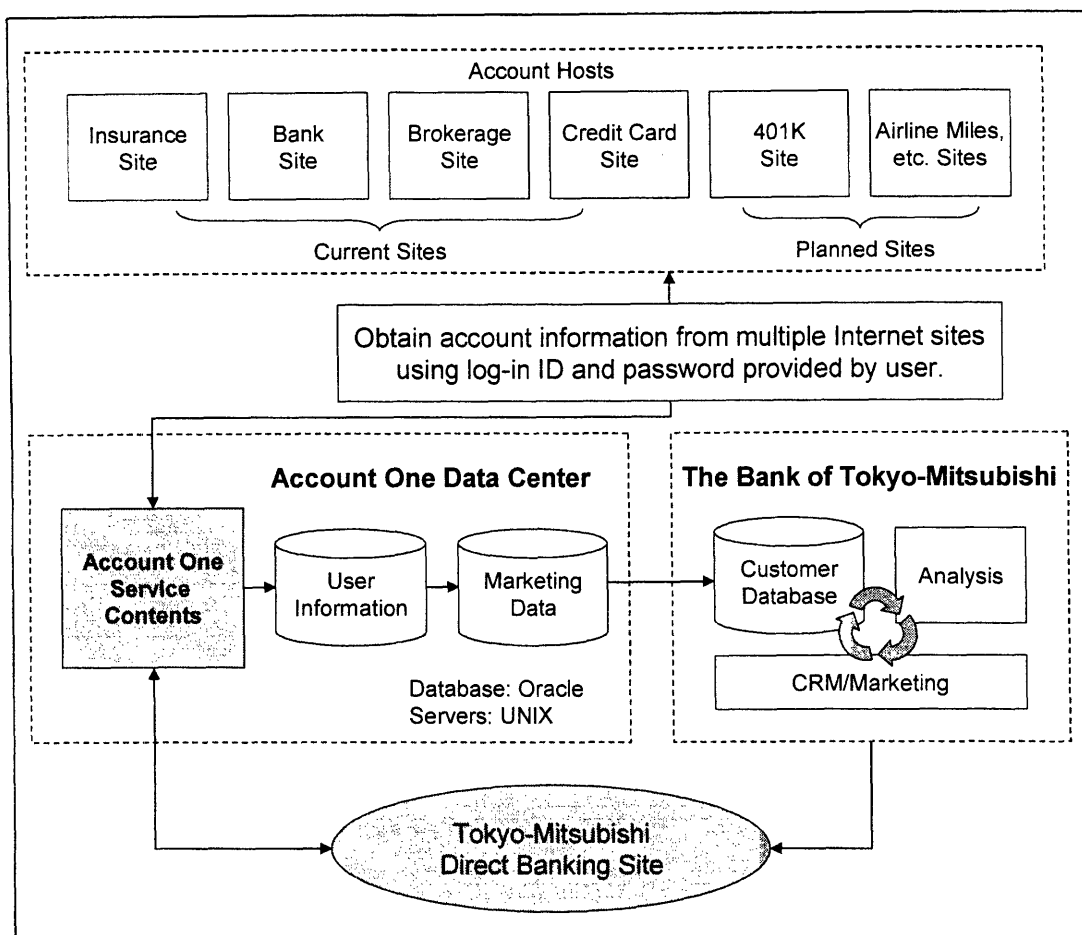
	Feature	Description
<b>Basic Features</b>	Account Balances	List balances of aggregated accounts on one page.
	Account Activity	Lists account history and activity of aggregated accounts.
	Asset Charts	Graphic charts depicting breakdown of personal assets by account, and grouping transactions by type.
	Offline Assets	Assets not accessible to the account aggregation service can be entered manually and included in financial planning calculations.
	Quick Log-In	System remembers online banking name and password as well as third-party account log-in information for one-click log-in.
	E-Mail Alerts	Alerts customer when deposits/withdrawals are made or when account balance exceeds or falls below customer-set parameters.
<b>Financial Planning Features</b>	Model Portfolio	Constructs model portfolio based on assets in aggregated accounts and manually-entered investment goals.
	Performance Analysis	Compares performance of holdings in aggregated accounts with performance of model portfolio.
	Investment Simulation	Forecasts performance of model portfolio and compares the result to investment goals.
	Historical Performance	Charts past performance of holdings in aggregated accounts and compares the result to investment goals.

(Source: The Bank of Tokyo-Mitsubishi)

**Table 6-3: Tokyo-Mitsubishi Wealth Palette Service Features**

The goal of the trial phase was to resolve issues such as: what types of customers would use the service; what aspects of the service would be most popular; how effective would the targeted cross-selling efforts be based on the aggregated data. The team then used this information to set its strategy for the full-fledged launch of the service in the future. For example, based on the sign-up response and use patterns viewed during the pilot, BTM had to decide whether to limit the service to a

subsection of its affluent mass-market customers, or to provide it to all such customers, or to roll it out to an even broader customer base. The bank also leveraged the aggregated data to drive targeted marketing efforts. Based on the information obtained, the Retail Business Unit planned to send advertisements for other products and services to customers via direct marketing, such as e-mail and inserts in monthly statements.



(Source: The Bank of Tokyo-Mitsubishi)

**Figure 6-7: Tokyo-Mitsubishi Wealth Palette Service Concept**

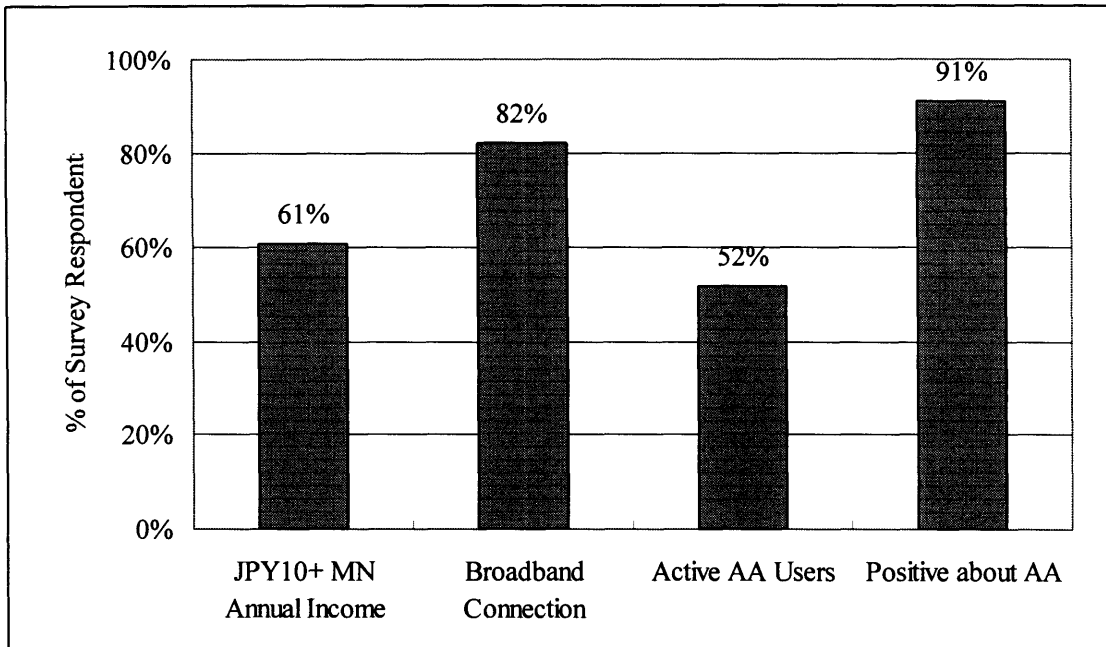
In April 2003, the bank added financial analysis and advice tools provided by a financial solutions provider in Japan. Financial data from a customer's aggregated accounts were automatically fed into the financial analysis tool. The customer could also manually enter asset information from non-aggregated accounts. Based on this data, the tool produced an asset allocation analysis of the

customer's current portfolio. Moreover, the financial advice tool could generate model portfolio recommendations based on a series of simple questions concerning the customer's investment goals. Then the bank added a pension calculator which could calculate the recommended amount a customer needed to save for retirement based on current asset holdings.

#### **6.5.6. User Response and Feedback**

Response to the AA service was quite strong, even during the trial phase. About 2,000 customers (50% of those who signed up for the service) actively began to use it. The bank undertook a survey of its Wealth Palette users in August 2003, and an impressive 90% of respondents said they felt positive about the service. At this point, customers seemed most comfortable with the core AA functionalities, with more than 80% citing the ability to display multiple account balances on a single screen, 60% citing the ability to check account history, and 50% citing quick log-in as useful features of the service.

The survey also produced valuable demographic information about the user base. More than 60% of respondents said they had annual household incomes exceeding ¥10 million (about US\$90,000). More than 80% of respondents had broadband connections at home, suggesting they would be active users of the Internet (see Figure 6-8).



(Source: The Bank of Tokyo-Mitsubishi)

**Figure 6-8: Wealth Palette User Response**

Perhaps most crucial, survey respondents' assets held at other financial institutions were equal to or greater in value than the assets they maintained with BTM (among those users with assets at other financial institutions). Because another important objective of the A initiative was to derive information about how customers would utilize competing financial services, as well as obtaining a snapshot of their total financial assets, this was a significant finding.

Moreover, BTM received enormous amounts of feedback about the usability of its AA service. For instance, regarding the design of its webpage, it became clear that many customers preferred an arrangement of buttons, like an ATM display, rather than an elaborate webpage. Based on this kind of feedback, BTM modified its webpage designs more than fifty times during the trial stage in order to satisfy customer preferences.

### 6.5.7. Full-Fledged Service

In February 2004, at the conclusion of the pilot, BTM decided to offer the service, without fee, to a broader segment of its affluent mass-market customers beginning in August 2004. Additionally, for its mass retail segment, the bank plans to introduce a similar AA service for a small fee. This decision to target its mass retail segment rests on the successful results of the pilot program and the bank's expectation to targeting that segment will in fact move more customers to becoming higher-segment customers as they continue using the AA service.

## 6.6. Analysis of R&D Activities in BTM

The traditional R&D method discussed in Chapter 2 means that we should not answer the following questions in order to assess the effectiveness and innovation of the bank's R&D activities. Applying the R&D frameworks identified in Chapter 2 to the five cases discussed above, I am now in a position to analyze the R&D activities of BTM.

Reiterating the factors in formal R&D activities, they are:

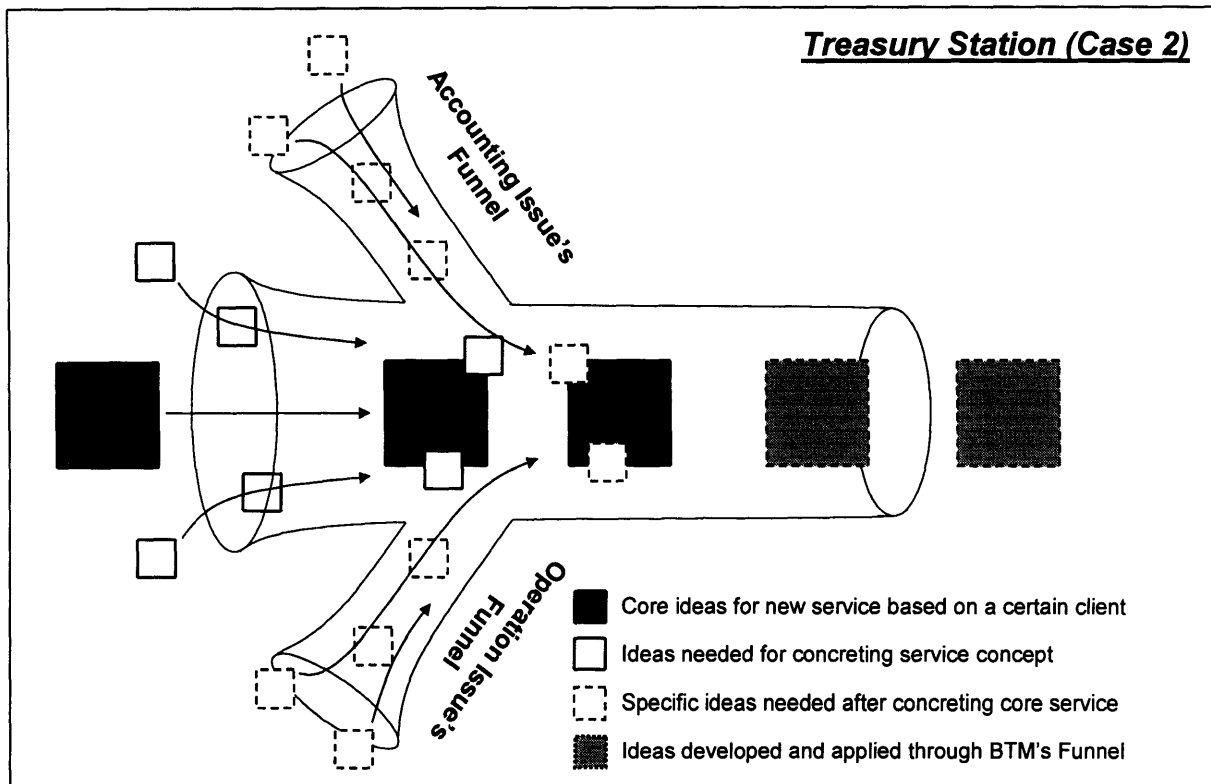
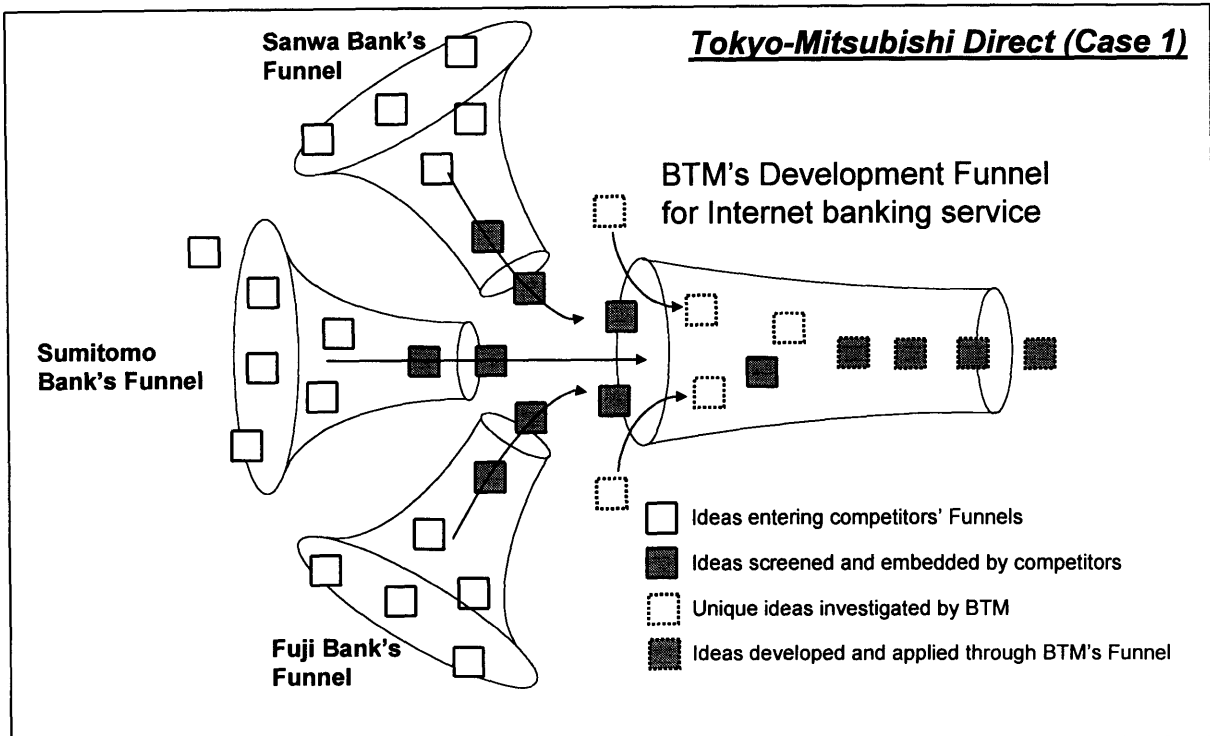
- ◆ ***Inject abundant new ideas and screen carefully***
  - *Widen the mouth of the "Development Funnel".*
  - *Narrow the funnel neck.*
  - *Ensure that selected projects delivers the objectives anticipated when the project was originally approval.*
- ◆ ***Grasp real customer needs***
  - *Identify the real customers.*
  - *Identify exact customer needs.*
  - *Manage the costs of understanding customer needs.*

- ◆ ***Embody customer needs in new products and services***
  - *Organize a front-loaded development.*
  - *Perform trial-and-error iterations sufficient to reflect customer needs in new products.*
- ◆ ***Manage the R&D in service industries***
  - *Perform “live” experiments.*

### **6.6.1. Inject Abundant New Ideas and Screening Carefully**

As discussed in Chapter 2, innovative process of R&D was illustrated as a funnel, and managing the Development Funnel involves three different challenges. The first is to widen the mouth of the funnel. In order to increase the number of new product and new process ideas, the organization must expand its knowledge base and access to information. The second challenge is to narrow the funnel’s neck. After generating a variety of alternative concepts and ideas, management must screen them and focus resources on the most attractive opportunities. The third one is to ensure that the selected projects deliver on the objectives anticipated when the project was approved.

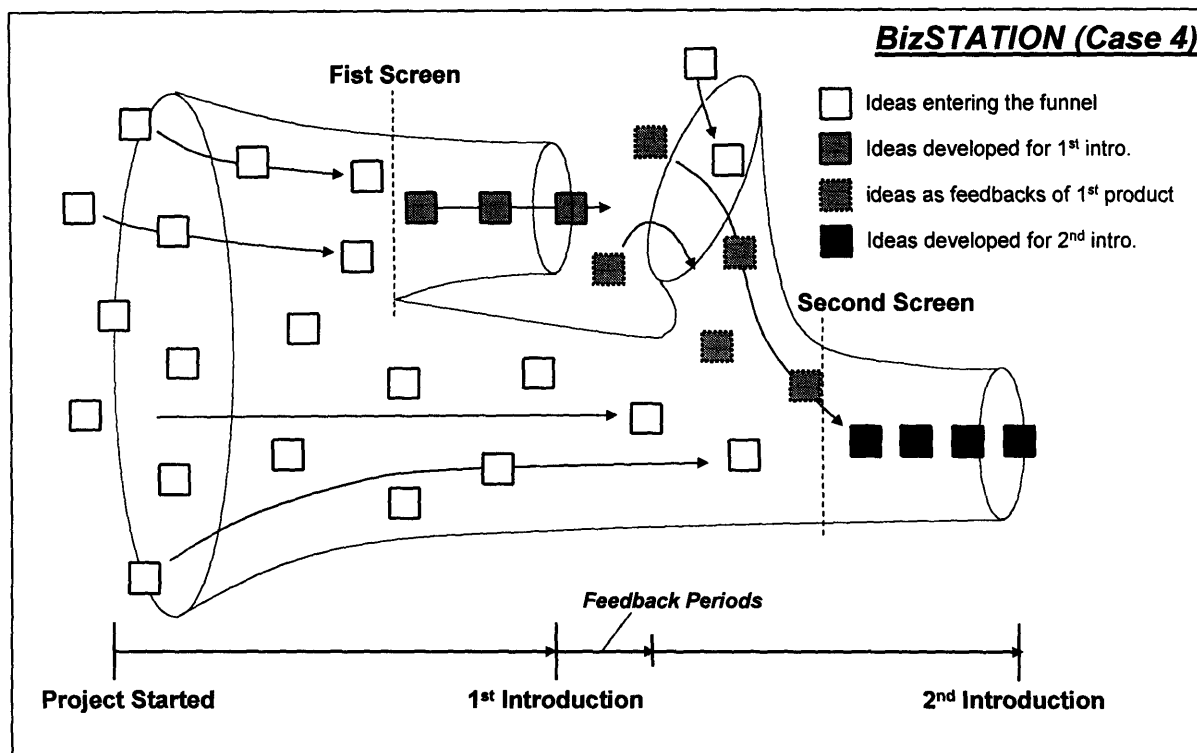
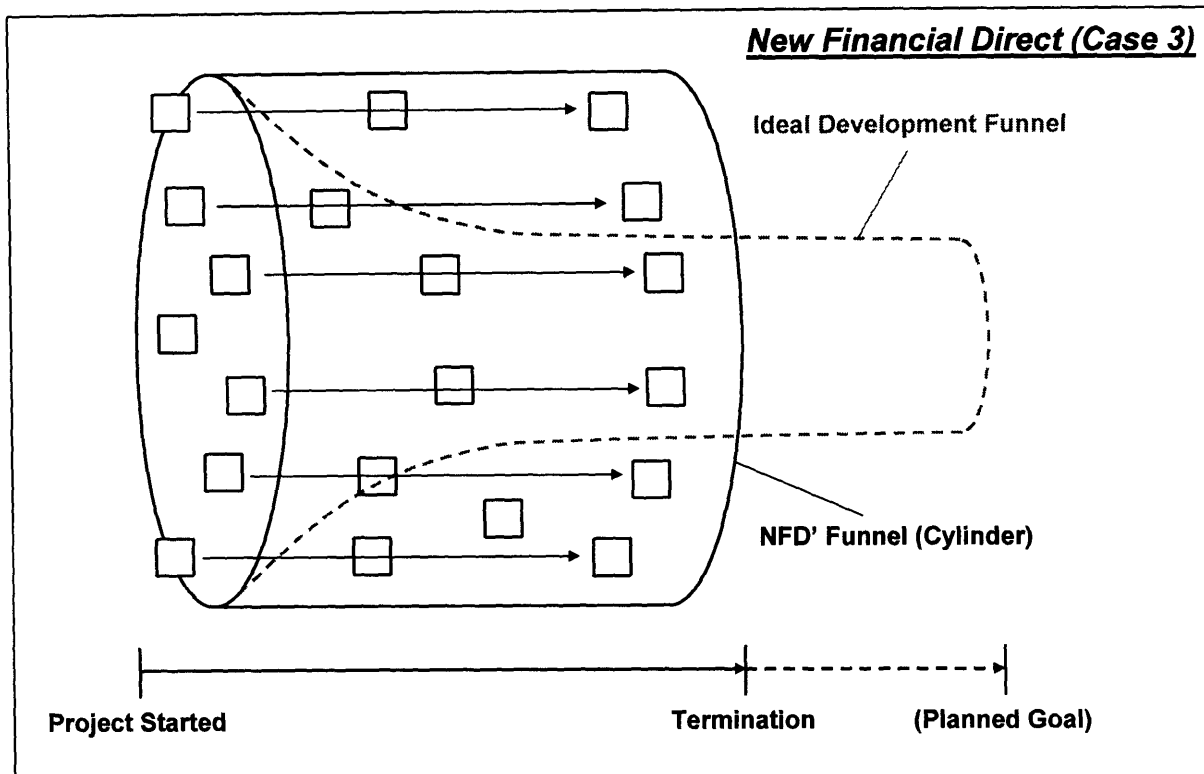
In the cases of R&D activities at BTM, I have depicted the Development Funnels of each case in Figure 6-9.



(Source: Author)

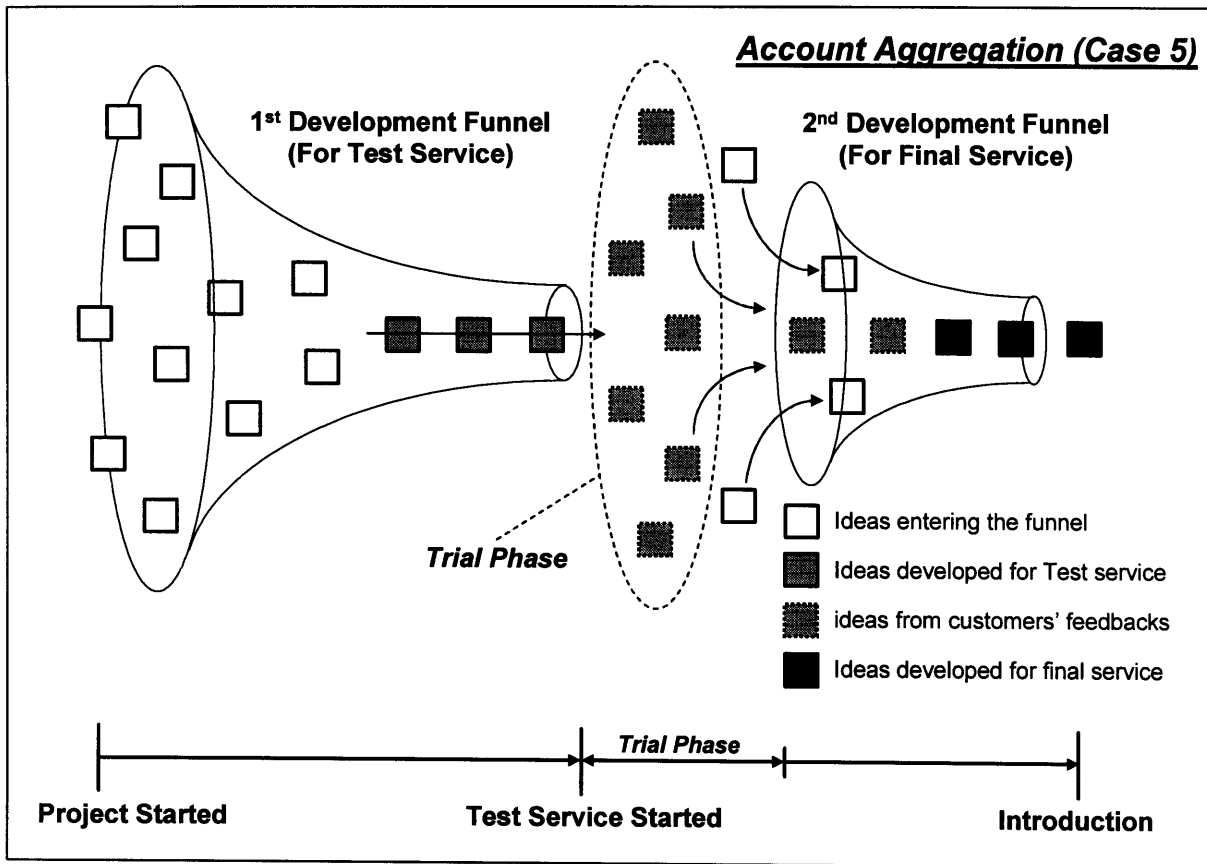
**Figure 6-9: Development Funnels of BTM's R&D projects (1)**





(Source: Author)

**Figure 6-9: Development Funnels of BTM's R&D projects (2)**



(Source: Author)

**Figure 6-9: Development Funnels of BTM's R&D projects (3)**

**Widen the Mouth of the Funnel**

In terms of the size of the funnel's mouth, the funnel for "Tokyo-Mitsubishi Direct" (Case 1) and "Treasury Station Web" (Case 2) is not large. Following similar services already introduced by competitors, the bank developed Tokyo-Mitsubishi Direct (TMD). Thus the project had no novel ideas in terms of technology and function. When the bank developed TMD, many of the technical and functional ideas had already been screened by competitors and were being used in their own services. And since it was easy for BTM to examine those ideas, widening the mouth of the Development Funnel was not crucial in those cases. So, while the mouth of the funnel was narrow, the bank could still generate new ideas for its services.

As noted in Case 1, TMD employed a new security scheme that its competitors had never applied. It also provided in one package services that included three different channels—Internet, mobile, and telephone—which other banks also had never done. Thus, since the bank came up with some novel ideas and combined them with ideas already being used by competitors in their services, BTM achieved a successful introduction of its service, and eventually obtained the most customers among Japanese Internet banking services.

However, in terms of function, no new ideas were adopted in the TMD service. That subsequently resulted in the New Financial Direct project (Case 3), but this project would not have been necessary if the mouth of funnel had been wide enough originally to consider new functions.

In the case of development for “Treasury Station” (Case 2), the mouth of the Development Funnel was also narrow since this project was generated to meet a specific corporate client’s needs due to environmental changes in Japanese accounting standards. After entering the narrow mouth, the core ideas were combined with a variety of information necessary for achieving the goal, such as technical, accounting, operational, and strategic impacts. I have depicted this Development Funnel in Figure 6-9 as having several sub-funnels connected to the one considering core customer needs. In this project, functions desired by the customer were clear, so a narrow funnel mouth might not bring poor functions to the new service. It would be useful to widen the mouth of the Development Funnel for cases in which customer needs and technical potential are unclear and/or complicated, but in cases where those are simple and clear, such as “Treasury Station,” the narrow funnel mouth was effective.

In contrast, in the cases of New Financial Direct (Case 3), BizSTATION (Case 4) and Account Aggregation (Case 5), the mouth of their respective Development Funnels were wide. In Case 3, the services offered that, which had been offered earlier in TMD, did really not satisfy customers for whom the Internet was already diffused, because it offered only basic financial transactions. The possibility that a similar implementation (in the form of New Financial Direct) might not generate additional revenues must have been discussed during its development. Because the funnel mouth was

narrow in the TMD development, those issues had to be considered in the process of any subsequent new project development, and a wider funnel mouth should have been developed.

The Development Funnel for BizSTATION (Case 4) had also a wide mouth. Although the basic functions had already been screened during the development process for the existing Electronic Banking (EB) services, the ideas went beyond merely implementing the functions of EB to include Web-based services. Moreover, even though the bank had already accumulated the knowledge to develop an Internet financial service through its TMD program, it had to consider the issues specifically relevant to corporate clients, such as differences in the pattern of using bank accounts, attitudes toward security of transactions, and use of novel functions such as the “Secure Message”.

In the case of the Account Aggregation Service (Case 5), its development funnel exceeded that of New Financial Direct project (Case 3). In addition to the ideas examined in the former project, more practical issues were also discussed with the Retail Banking Unit, such as consistency with existing business.

### **Narrowing the Funnel's Neck**

The second challenge, narrowing the funnel's neck through a process of screening, was not managed well in most of the BTM cases. Indeed, it was the case that nothing was ever said that the bank had systematic functions for screening ideas generated from the first process of development. In projects with a narrow-mouthed Development Funnel because its goals were clear, such as Tokyo-Mitsubishi Direct (Case 1) and Treasury Station (Case 2), the ideas entering the funnel were relatively well-screened and potential problems related to not narrowing the funnel neck did not happen.

However, in the New Financial Direct (Case 3) project, which had a widened funnel mouth, because the bank did not screen those ideas, the project failed. In fact, I would characterize this project more like a cylinder than a funnel. Moreover, the screening of ideas also had problems. What was

evident in many cases was that BTM emphasized the development of business strategies instead of developing the system itself and allocating managerial resources to the system development.

In terms of this process, Wheelwright & Clark (1992) indicate that the goal is not simply to apply limited resources to selected projects that meet the business objectives of the firm and enhance the firm's strategic ability to carry out future projects. From that point of view, the resource allocations for the developments of New Financial Direct (Case 3) and BizSTATION (Case 4) should have been improved. On the other hand, in the case of Account Aggregation (Case 5), the screening process should have been strict and relevant. The project team actually focused on a specific technology—account aggregation—among many Internet technologies, and then steadily narrowed down the discussion about the uncertainty of the business, selection of customers (for mass affluent), the development method (ASP approach), and how to handle the introduction.

#### **Ensuring the Project Delivers as Anticipated**

Finally, in terms of the third challenge, BTM did not take a flexible approach in some R&D cases. In the development of New Financial Direct (Case 3) and BizSTATION (Case 4), system development was prioritized higher than business development, and the project left unresolved problems concerning original business goals, such as who would be willing to pay for such services. In the development of BizSTATION, the fact that the project ignored suggestions from the Business Study Team, which had identified gaps between the service process and the client's actual operations, meant that the bank could not realign the course of the project toward the original business goal.

Overall, in terms of injecting abundant new ideas and screening them carefully, the R&D methods at BTM usually entail setting up a wide mouth for a project's development funnel but it does not have processes in place to carefully screen the ideas that are gathered and then embody them into a specific service. The failure of New Financial Direct (Case 2) was caused by the lack of this screening function, even though it had a wide mouth in its development funnel.

## 6.6.2. Grasping Real Customer Needs

How to correctly grasp customer needs is one of the most crucial factors in R&D activities, and has to be discussed in terms of identifying which customers might have specific needs.

### *Identify the Real Customers*

In this discussion in Chapter 2, I cited von Hippel's (1988) concept of "Lead User" and noted that we should extract real customer needs from "lead users" not from targeted users who are the focus of marketing methods. According to von Hippel (1988), lead users have needs that will become more common in a marketplace at a future time, but lead users face those needs months or years before the general marketplace, and lead users are positioned to reap major benefits if they can obtain a solution to their needs. von Hippel described how to contact lead users efficiently and how to create new products that met their needs—both factors crucial to innovation. Furthermore, he pointed out that the approaches for contacting them and understanding their needs would be often expensive and inexact processes, so he proposed "Customer as Innovators" approach, which shifts part of the development process from manufacturers to customers.

### *Identify Exact Customer Needs*

So, how did BTM attempt to identify its customer needs in the cases cited here? I could not find any evident of attempts to grasp them systematically. When developing TMD (Case 1), the bank did not plan to incorporate any new functions into the TMD service that were different from its competitors' services. In that case, team members learned about customer needs by using its competitors' services, not by contacting customers directly. And in the case of New Financial Direct (Case 3), the work to understand customer needs was done by the 'Attara-Iina" team which also never accessed the customers directly. Similarly, in the development of BizSTATION (Case 4), the effort never went beyond a consideration of what the bankers decided were the customers' needs and most of the service requirements also were evolved from team members' ideas. As a result of prioritizing

system development higher than business development, the team ended up taking a “tail-wagging-the-dog” way to finding customers who were appropriate for a service already developed.

The “Treasury Station” project (Case 4) faced different situations. Since the project arose out of a specific customer’s needs, the new service embedded those needs fully. In this case, the bank had a Lead User and could utilize useful information about the problems it faced. In fact, realizing that this new service had attracted other corporate clients, one could say that the first client for whom BTM introduced the project could be the Lead User in that market.

### **Manage the Cost of Understanding Customer Needs**

How did the bank manage the cost of understanding its customer needs? In terms of the retail banking business, although BTM expected that private banking services would grow in the future given the facts of an aging society and the bankruptcy of Japanese pension financing, BTM did not seek the answer in terms of who had definite needs and what those needs were only through the team members’ imaginations. At this point, the bank should realize that determining customer needs by asking real customers was key to the process of developing the New Financial Direct (Case 3). Even though those issues were taken into account in the later Account Aggregation project (Case 5), the cost of failure for the New Financial Direct project was too expensive to ignore.

The Account Aggregation project employed an approach similar to the “Customers as Innovators” approach proposed by Thomke & von Hippel (2002), with the objective of providing a toolkit that would enable users to simulate their investment portfolios and to stimulate actual needs for private banking products such as mutual funds and consumers’ loans. A key point supporting this asset management tool was that customers could choose their own investment portfolios and the service would support them. The bank could regard those affluent mass-market customers as Lead Users who would grow into main customers through this promising private banking market.

### **6.6.3. Embody Customer Needs in New Products and Services**

How customer needs be gathered and embedded into new products and services? And if it is done, will customers buy those products and services? To understand their needs, the processes should involve the customers too.

#### **Organize a front-loaded development**

Thomke (2001) pointed out that to prototype rapidly and roughly, and to fail in the early stage of development is important. Failures in the early stage typically lead to holding down both time and monetary costs when performing subsequent trials and can generate new products that meet customer needs and increase revenues.

In the development of Tokyo-Mitsubishi Direct (Case 1), a prototype was set up to examine customer responses to usability and security procedures, to determine if the ideas could be embedded into the service. As a result, the usability and security schemes became leverages to promote this new service. Treasury Station (Case 2) was strongly characterized as a customized service, so many prototypes were tested for the client. The information from those prototypes was utilized in the commoditization process later, and contributed to lowering development costs.

On the other hand, New Financial Direct (Case 3) had no process of prototyping although the project involved a system development with more than ¥1 billion (about US\$9 million) worth of investments—similar to establishing an Internet-only bank. Unfortunately, the project was terminated because it could not identify concrete functions and never did reach the trial-and-error stage. But if it had attained that stage, it would have been too late to reflect on the results of prototyping the new service with cheaper costs because it had already concretized the specifications of basic banking functions by that time.

In the case of BizSTATION (Case 4), no early prototype was performed either. In fact, the Business Study Team found gaps between the new service's process and the clients' operation process during the late stage of development. However, those gaps were ignored due to the expense required to



modify them, as I noted in the discussion of Case 4. If the project had performed prototyping earlier than it did, the costs could have been held down and the new service would be better.

The Account Aggregation project (Case 5) paid heed to the issue and conducted trials utilizing real customers. However, the trials never occurred in the early stage of development. Because an ASP service was used, the cost to correct the service during the late stage might have been cheaper than to use in-house development.

As noted, R&D activities in the Bank of Tokyo-Mitsubishi did not set up a prototype process sufficient to reflect feedback to new products during the early stage of development when corrections could have been and less cost involved. Later, this actually became an obstacle to creating new products that reflected customer needs.

#### **6.6.4. Managing R&D Activities in Service Industries**

It is difficult to manage R&D activities in the service industries because such services are frequently intangible. And it is difficult to isolate them into a laboratory because services are generally consumed at the time they are provided. As a result, the trial-and-error process, in which providers examine the usability of a service and determine whether it reflects customer needs, should be performed at the real locus of the business with real customers. Thomke (2003) studied the R&D activities of the Bank of America and subsequently proved that traditional R&D method used by manufacturers usually could not be applied to the service industry.

##### ***Perform “Live Experiments”***

For the Bank of Tokyo-Mitsubishi, “live experiments” were sometimes performed, as I noted in the cases. Live experiments involve a certain amount of risk because real customers are being used in the experiment, but BTM decided it could manage that risk in some cases.

Generally speaking, in BTM’s R&D activities, the bank can minimize the risk accompanying live experimentation by limiting customers to adopting a new service in the beginning of their

introduction. Treasury Station (Case 2) was provided only to a corporate client. Even though it was only one client, this company was so large and its daily transactions so massive that the impact on its banking business would have been serious if trouble had occurred. So the bank monitored all transactions every day during the test of this service in terms of operational and accounting consistency, and gathered daily feedback such as poor use or gaps with existing schemes. In the case of emerging problems, BTM corrected them immediately when they appeared.

The project to develop BizSTATION set up a trial phase and limited the trial to 300 clients. The Account Aggregation trial was also limited to a maximum of 5,000 users, which reduced the risks associated with introducing a new service. These live experiments contributed to accumulating a storehouse of R&D knowledge within the bank. The feedback from the Treasury Station project (Case 2) increased to 80 in the first month, and the bank implemented the improvements and suggestions in descending order of priority. The feedback was useful for developing the mass product later. Those involved in the trial of Account Aggregation also played a big role in helping BTM understand the premises of the private banking business by utilizing Internet technology.

## **6.7. Summary**

In this chapter, I discussed five cases from the Bank of Tokyo-Mitsubishi that were actual examples of the bank's R&D activities. By comparing these cases against the factors required in formal R&D activities as noted in Chapter 2, I analyzed how BTM practiced its R&D.

Beginning with the development of its Tokyo-Mitsubishi Direct service (Case 1), the R&D activities in BTM had several problems. But during later R&D activities, the bank accumulated knowledge about and began to exercise aspects of formal R&D methods that were apparent in its Account Aggregation project (Case 5). The issues and challenges encountered during BTM's R&D activities include the following:

- ◆ The bank generated many ideas for its various projects, which means that BTM is capable of forming a wide mouth for its Development Funnel, sufficient for pursuing a range of potential projects.
- ◆ However, when it came to narrowing down those ideas generated, the bank did not have a systematic process in place to handle that task. As I pointed out in the failure of New Financial Direct (Case 3), the bank could not narrow the funnel's wide mouth. The BizSTATION project was an example of BTM's tendency to prioritize system development over business development and allocate managerial resources to system development which enabled the bank to introduce new services physically. But at that point, in order to improve the service, the bank needed to screen many excellent ideas by cooperating with the Retail Banking Unit to carefully consider the future of the private banking business.
- ◆ Instead of approaching customers directly to gain an understanding of their needs, the bank decided to obtain that information indirectly through its business units. Hence it was not organized enough to understand the real customer needs. The bank was better organized for its customer research into the usability and security of new services, but it did not perform systematic examinations into what services or functions the customers really desired. To make matters worse, BTM did not realize what customers really wanted in terms of new services and did not have systematic mechanisms for determining this. In the development of Treasury Station (Case 2), the bank unknowingly acquired a Lead User, and made great use of it for new product development. And the Account Aggregation service (Case 5) it used affluent mass-market customers who have the potential to grow into future customers of the bank's private banking market (hence would be Lead Users as well). Finally, it offered a toolkit of sorts in the CAI approach which helped the bank to identify customer needs.
- ◆ The trial-and-error process in which new services were tested to determine they reflected customer needs was built into the R&D activities of BTM. However, that process did not kick in until the late stage of development, instead of the early stage. In the case of BizSTATION (Case 3), the

problems found in the prototyping process (not uncovered until late in the development process) were ignored because of the costs required to modify them. The bank did not realize the need for a front-loaded development process would lead to lower development costs.

- ◆ The live experimentation that is recommended for achieving innovations in services was organized in some of BTM's R&D activities. However, it still did not achieve the sophisticated level like that of Bank of America, which was one of the most scientific and empirical approaches among R&D activities in the service arena. The trial-basis services prior to or immediately after their introductions, in which new services were provided to a limited number of customers, greatly contributed to reducing risks that might have affected the entire banking business. Furthermore, those live experiments play a role in accumulating added knowledge which would be useful for full-fledged or additional developments in the future.

# CHAPTER 7

## Conclusion

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In this thesis, my aim was to pursue answers—generated from my own experiences in the Japanese banking business— as to why Japanese banks have not yet achieved innovations. In the R&D activities of manufacturing firms, such companies often perform scientific and empirical experiments, but banks have never practiced such systematic R&D activities; indeed, there has been no centralized organizational R&D function for a long time. But, triggered by the emergence of the Internet, a few R&D organizations were established in the late 1990s. It is difficult to say, however, whether the R&D activities of banks were performed well or with similar scientific methods as used by manufacturers.

Analyzing the problems Japanese banks have encountered with their R&D performance, and identifying some solutions were the ultimate objectives of this thesis. To achieve this purpose, I discussed the following concepts, challenges, and outcomes.

In Chapter 2, I introduced some of the relevant research literature which describes empirical R&D methods for understanding the factors that are crucial for innovation in the banking industry. I noted that four factors are important for innovations in banks: an organization for R&D, a process for understanding customer needs, a process for trial-and-error, and live experimentation. In Chapter 6, I analyzed some actual R&D activities in the Bank of Tokyo-Mitsubishi, and sought to determine how these four insights were used.

In Chapter 3, I described the business environment surrounding Japan's banks, such as government regulations, problems with non-performing loans, and a migration toward business units and holding company systems. I suggested that those issues made it difficult for Japanese banks to enter and invest in a new business, and there are environmental factors that hinder innovations in the banking business. I summarized how those factors affected the Japanese banking industry, as follows:

- ◆ Japanese banks had become anticompetitive due to more than 60 year of government regulation which allowed Japan's banks to function only in the banking business. This situation caused indifference to the need to create and refine banking services that meet customer needs, and eventually fostered a sense of unfamiliarity with the ideas of innovation in their management system.
- ◆ The crisis involving non-performing loans caused strict limits on investment in special projects, especially ones that were long term or carried some risk for generating profits. Despite advances in deregulation for financial industry over the past ten years, the severely restricted business environment contained the banks' R&D activities within the confines of narrow managerial resources.
- ◆ Although many of Japan's banks have adopted financial holding companies and the business unit system to improve their competitiveness and efficiency, the delegation of authority in terms of resource allocation is still not sufficient to promote businesses that meet specific customer needs.

In Chapter 4, I described the technological environment surrounding Japanese banks when the Internet began to emerge. I noted how the Internet affected Japanese banks, many of which were seriously constrained when it came to creating new products and services. I summarized technological issues facing Japanese banks in the following:

- ◆ A history of more than 30 years of utilizing information technology has resulted in a solid core system within the banks' mainframe architecture. Japanese banks invested vast amounts of money in their mainframes, and as a result they achieved a very reliable backbone system.
- ◆ For that reason, the banks organized their system development units to allocate people who were specialized in technologically developing and maintaining the mainframes, and those people were kept separate from the financial business in order to develop the systems in-house. However, those

large infrastructural and organizational assets became obstacles to applying the new technology of the Internet to their business flexibly.

- ◆ The emergence of the Internet had an enormous effect on the banking business in Japan. Customers quickly realized the convenience of accessing financial services through the Internet directly, while banks continued to provide those services at physical branch offices. Combined with their restructuring strategies, and realizing the low cost of Internet operations, Japanese banks rushed into launching Internet banking services. These projects served to generate the banks' first R&D organizations in the late 1990s for the purpose of introducing new services using the Internet.
- ◆ Emerging Internet-only banks also fostered a sense of crisis among the Japanese banking industry. Earlier the Internet-only banks had not been strong competitors against existing banks. But those new entrants played a major role in encouraging traditional banks to promote systematic R&D activities that effectively and efficiently utilized the Internet in their banking business.

In Chapter 5 I discussed historical and current R&D activities in the banking industry focusing on the organizational structure and resource allocation. The banking industry had not organized its R&D activities after the pattern of formal R&D methods. However, with the emergence of Internet technology in the mid-1990s, and intensifying competition from Internet-only banks, the traditional banks began to establish R&D organizations to focus on effective ways to utilize the Internet. The characteristics of these R&D activities are summarized below:

- ◆ During the process of organizing R&D units, the big decision was whether to establish a centralized or decentralized R&D organization. Most banks organized a centralized R&D department because of unfamiliarity with Internet technology and uncertainties about business oriented around the Internet.
- ◆ Initially, many banks began performing their R&D activities through their centralized R&D organizations, but later they faced problems about how to reflect customer needs in their new

products and services. Most major banks reorganized to decentralized R&D in their business units after they became more familiar with the Internet technology and had accumulated sufficient knowledge about it.

- ◆ Most banks decided against granting authority to R&D units to allocate managerial resources such as budgeting and human resources control. However, many R&D departments played some role in squeezing managerial resources from bank management, and the techniques for doing this varied from bank to bank.
- ◆ R&D activities in the Bank of Tokyo-Mitsubishi were distinctive because the bank did grant them control over resource allocation. However, that generated another problem because the new products and services being developed did not meet customer needs because of the lack of communication with each business unit as well as customers.
- ◆ In terms of how to reflect customer needs in new products, the example of the Bank of America showed how to handle big challenges. Its Innovation & Development Team faithfully employed formal and empirical R&D methods, just as manufacturing firms did, and they developed a systematic R&D method that could be applied in the banking industry.

In Chapter 6, I describe five cases of actual R&D projects undertaken by the Bank of Tokyo-Mitsubishi. I discussed how the bank performed its R&D activities and pointed out some issues for achieving successful R&D. Along the way, I applied the frameworks of the Development Funnel, the Lead User method, Customer as Innovator approach, and so on. Initially, R&D activities in the Bank of Tokyo-Mitsubishi encountered several problems, but during the course of several experiences, the bank accumulated considerable knowledge about R&D methods and began to exercise certain formal R&D methods in their later projects. Here I summarize the issues found in BTM's R&D performance:

- ◆ In terms of how the bank generated ideas, BTM formed a wide mouth for its Development Funnel sufficient to pursue a broad range of potential projects.



- ◆ However, when those ideas needed to be narrowed down, the bank had no systematic processes for doing that, of the processes tended to be insufficient. In fact, BTM failed in one large R&D project (New Financial Direct) due to its inability to following through with this narrowing process. In another case (BizSTATION), the bank prioritized system development over its business, choosing to allocate managerial resources to developing its system of introducing new services physically.
- ◆ The bank's approach to understanding customer needs was not organized enough to understand real customer needs. To make things worse, BTM did not realize what customers really needed for new services, and did not have systematic mechanisms for obtaining this information. In some cases, the bank unknowingly used the Lead User concept to test a new service, which enabled them to recognize its great usefulness for new product developments. In another instance, the bank played a role in using a toolkit in the CAI approach which helped the bank to gain a better understanding of customer needs.
- ◆ The trial-and-error process, in which new services were examined to see if new services faithfully reflected actual customer needs, was built into the R&D activities of the Bank of Tokyo-Mitsubishi. However, that process was located in later stage of the development process, not in the early stage. This meant that the problems found during the prototyping process were ignored because of the costs involved to modify them. The bank still does not have a sense of the need for a front-loaded development which could lead to lower development costs.
- ◆ Live experimentation, which is recommended for testing innovations in services, was organized in some of BTM's R&D activities. However, it still has not achieved the sophisticated level like that of Bank of America, which has one of the most scientific and empirical approaches among R&D activities. Such trials, provided to a limited number of customers just prior to or immediately after the introduction of new services, would greatly contribute to reducing the risks that could affect the entire banking business. Furthermore these live experiments also play a role in accumulating knowledge which is useful for full-fledged or additional future developments.

As a result of the discussions above, I have extracted four issues that are crucial elements for the R&D activities of Japanese banks, especially for creating new financial services that utilize Internet technology. They are:

### **Manage the Institutional Factors**

The first issue to be managed in Japanese banks' R&D activities is both explicit and implicit regulation in their banking business. Although deregulation has advanced in the Japanese banking industry technically, tacit regulation remains in the form of Japan's Financial Service Agency which requires banks to notify the FSA whenever they are going to do something new, and these situations always raise the invisible costs of R&D. To avoid that institutional cost, I believe Japanese banks need organizational supports within their organizational structures.

### **Manage the Legacy Assets**

In the Internet era in which banks are required to quickly and timely provide new services that their customer actually desire, it is clear that the banks' backbone systems, built around a mainframe architecture that requires tremendous time and money, have become a burden. However, to scrap the system into which more than ¥10 billion (about \$910 million) has been invested over more than 30 years is not realistic. Thus, how to integrate new technology into those legacy assets is a major issue. Knowing that maintenance costs of the mainframes mean limited new investments, the banks must realize that switching from that legacy asset to a new one will eventually lead to increasing their overall business value. In fact, Shinsei Bank, which did not need to maintain continuity with its legacy assets owing to bankruptcy, replaced its backbone banking system with open architecture that requires considerably lower costs. Of course, these major decisions depend on the top management of each bank.

### **Understand Customer Needs Well**

In the actual R&D activities of Japanese banks, each one should do a better job of leveraging their understanding of customer needs. Among the enormous R&D tasks needed to create new financial services, the process of identifying and understanding customer needs must have the highest priority. Banks should understand that customer needs are known only to the customers themselves, and asking the customers is the only way to understand their needs.

When looking at useful approaches for the R&D activities in the Bank of Tokyo-Mitsubishi, I believe the Lead User method or the Customers-as-Innovators approach would work well as methods for achieving an effective and efficient understanding of real customer needs.

### **Organize trial-and-error Early in the Development Process**

Finally, Japanese banks should better organize the trial-and-error portion of their development process, in which they examine whether the ideas generated in their R&D activities will really satisfy their customers. Moreover, banks should set up this process in the early stage of their developments which should result in generally lower costs for project and also enable subsequent iterations of a new service to reflect feedback from customers.

Although it will be difficult to resolve all four of these issues simultaneously, I believe it is entirely possible to improve each one, one at a time, by accumulating experience and knowledge through ongoing R&D activities that consider formal and empirical methods.

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