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Bank of America: Mobile Banking

On a cold morning in January 2010, Jen McDonald, head of Bank of America Corporation's (BofA) Digital Marketing group, walked briskly to the conference room to discuss the future of the bank's mobile strategy with Douglas Brown, senior vice president, Mobile Product Development, and David Carrel, senior vice president, Strategy and Analysis at Starcom, one of several agencies the bank worked with to support its digital efforts.

BofA launched mobile banking in May 2007. Customers could access the bank through a mobile application (or app) on their smartphones, and through the mobile web on their phone's browser. Short message system, or SMS, capabilities, which would broaden the bank's reach to many more devices, were planned to go live in a few months. Brown, who was responsible for the development and launch of mobile banking, reported on the current status: "In less than three years we have four million mobile banking customers. That's an adoption rate almost five to eight times that of our online banking several years ago." McDonald was pleased: "Our mobile success has not gone unnoticed by the line-of-business managers, who are ultimately responsible for the profitability of their respective businesses such as mortgages or credit cards. We are constantly getting requests from them that they want to leverage the mobile platform by building into the mobile app functionalities for their specific businesses."

Brown was hesitant to make the bank's mobile app complex by adding more features. The added complexity could slow down the app and negatively affect user experience. He explained, "App complexity has led to some high-profile failures in the marketplace. This carries a huge risk." It was also unclear whether users were ready to sign up for mortgages or credit cards on their mobile phones. Carrel reminded them, "Don't forget that competitors view mobile as yet another platform to differentiate themselves. Just last month, Citi integrated credit card account information in its iPhone app. Citi customers can even track their credit card rewards on their mobile devices now."

Carrel floated a second option: "Why not create different apps for different target groups—say, an app for Merrill Lynch brokerage, or for small business customers? Citi and Wells Fargo have done this, feeling they can provide users a more customized solution." (See **Exhibit 1** for mobile banking apps for major players.) Brown hesitated. "Building apps means reprioritizing critical bank technology resources from other important business areas, such as online and ATM. These are costly resources that make the opportunity cost much higher than just the project cost itself."

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McDonald, Brown, and Carrel were aware that they needed to consider this decision in the broader strategic context of how mobile banking would affect the overall growth of BofA and the entire financial services industry in the future.

Financial Services Industry[1]

The U.S. financial services industry was fragmented, with thousands of banks offering retail and wholesale banking services. Due to mergers and bankruptcies, the number of commercial banks insured by the Federal Deposit Insurance Corporation (FDIC) had declined steadily from 14,628 in 1975 to 6,911 by September 2009. In 2009, the 10 largest banks held 46.4% of total deposits, with BofA the largest U.S. bank holding company, followed by JP Morgan Chase, Citigroup, Wells Fargo and PNC Financial Services Group (see **Exhibit 2** for an overview of BofA's major competitors).

In 2008–2009, the financial services industry went through the most stressful period in recent history. The collapse of the U.S. real estate and subprime mortgage markets caused a dramatic fall in the value of mortgage-backed securities, which had a profound effect on the industry and led to a deep recession in the U.S. and financial troubles abroad. The financial crisis resulted in a credit freeze as banks, burned by the subprime mortgage debacle, worried about their capital adequacy. Consumers and businesses reined in their spending, which was especially painful for BofA because of the size of its retail banking business.

As the financial crisis shook confidence in some of the largest banks, it provided opportunities for others. Several analysts noted, "smart firms will jump on this opportunity to poach disgruntled customers away by focusing on convenience, fees, and customer service, which are the ways that consumers choose a provider in the first place."[2] Some banks had begun waiving ATM fees, and offered greater access to banking associates; some used these interactions to cross-sell additional products and services. However, research showed that in 2009 consumers still chose their bank based on traditional criteria, such as low account minimums, competitive rates, and convenient locations.[3]

Bank of America

Founded in 1904 as Bank of Italy, and later called BankAmerica Corporation, the company merged with NationsBank in September 1998. The combined firm originally kept the NationsBank name, but within two years changed it to Bank of America. In 2001, Kenneth Lewis became the CEO. Under the leadership of Lewis, BofA expanded with several acquisitions: FleetBoston in 2004, credit card giant MBNA in 2006, investment management company U.S. Trust in 2007, mortgage company Countrywide in 2008, and Merrill Lynch in 2009.[4]

By 2009, BofA's businesses included retail banking (e.g., deposits, debit and credit cards, and mortgage loans), global wealth management, middle market lending, large corporate lending, global treasury services, and investment banking. By December 2009, BofA's markets covered 82% of the U.S. population, and the bank served over 53 million customers and small businesses. The bank held leadership positions in 23 of the top 30 metropolitan areas. It had 6,000 banking centers and 18,000 ATMs across the country, and held the number-one position in online and mobile banking in the country. In addition, BofA was the number-one mortgage originator and servicer in the U.S. The bank's global wealth management business managed more than $1.8 trillion in assets; while its investment bank was ranked in the top two for debt and equity raised in 2008. That year, revenues were up 9% from 2007, but net income was down by 73%. In 2009, Bank of America's revenues were

$119 billion with a net income of $6.2 billion[5] (see **Exhibit 3** for financial information). By the end of 2008, the company had about 250,000 employees.

Turmoil at Bank of America

Bank of America had entered the financial crisis with a reputation as one of the nation's strongest and best-managed banks.[6] Yet in January 2009, due to larger-than-expected 2008 fourth-quarter losses at Merrill Lynch, subprime and other exposures, and losses associated with certain equities (e.g., Fannie Mae and Freddie Mac), the U.S. government agreed to provide certain guarantees and $20 billion in capital to BofA as part of its commitment to stabilize the financial markets.[7] Not long after, Lewis regretted asking for the $20 billion, calling it a "tactical mistake."[8] He feared that the extra federal backing consequently linked his bank in the minds of investors and customers with Citigroup, which was forced to relinquish 36% of its ownership to the federal government to avoid insolvency.[9]

The Merrill Lynch acquisition and BofA's fourth-quarter losses began to weaken support for Lewis. In February 2009, as rumors intensified that the bank would be nationalized, BofA's stock traded at its lowest price in 20 years. By this time many shareholders were irate with Lewis, accusing him of a lack of transparency about the liabilities inherited from the acquisition of Merrill Lynch. On January 1, 2010, Brian Moynihan, head of consumer and small business banking, took over as CEO.

U.S. Mobile Banking Market[10]

Mobile banking was introduced in the U.S. in 2007. In a way, this extended the features of online banking with the added benefit that consumers could access their bank accounts on the move. Banks saw mobile banking as yet another channel to differentiate themselves from competitors and engage customers. For banks, this higher level of engagement could potentially lead to both higher income and increased customer retention. While mobile banking introduced some new capital investment and operational costs, analysts projected it to be one of the least costly banking channels. Costs per transaction were estimated at about $0.10 in 2009, but these were expected to drop to $0.03–$0.04 as the service scaled, running approximately the same as online costs per transaction. In contrast, the average cost per transaction for interactive voice response or IVR (computerized voice responses to callers) was estimated to be $0.13, with call center costs about three times IVR costs.[11] ATM costs were about $0.16 per transaction, and branch interactions were about $1.34 per transaction.[12]

Technology

There were three options for mobile banking: mobile messaging, mobile Internet, and mobile apps. Mobile messaging worked through SMS (short message system) and allowed customers to use their cell phones to check account balances or set up text message alerts about account activity, deposits, or transfers. SMS had the advantage of working across all wireless operators and required no software installation. However, it was text-based and limited to 140–160 characters per message. JP Morgan Chase started its mobile banking activity with this technology since it allowed wider reach.

Mobile Internet or web worked through a wireless application protocol (WAP) and effectively connected mobile users to a bank's online website through the mobile phone browser. Since almost all banks had a well-established online presence, this was the easiest option for banks. However, users needed a data plan (through their mobile provider) to access this service. In addition, slow browser speeds on many mobile phones coupled with small phone screens made this option less appealing to some users.

The emergence of smartphones, such as the iPhone, Android and BlackBerry, allowed banks to provide a richer experience to users through apps. By optimizing the user interface specifically for these devices, apps had the potential to engage users. In addition, the apps allowed users to locate bank branches and ATMs in the vicinity through GPS. Smartphones were expected to grow in use from 10% in 2008 to 46% of the total U.S. mobile phone market by 2012. However, the many combinations of devices, operating systems, and networks implied significant development costs for banks." According to one industry insider, "A simple app could be built for as little as $40,000–$50,000, while a more complex app requiring integration could cost several hundreds of thousands of dollars."

Market Size and Consumer Adoption

In 2009, an estimated 10 million consumers used mobile banking in the U.S; by 2014 this number was expected to grow to 37 million (see **Exhibit 4a**),[13] representing 30% of the total expected online banking users in the U.S. Total annual transactions for mobile banking services were expected to increase from about 180 million in 2008 to 2.4 billion in 2014 (see **Exhibit 4b**).[14] Improvements in mobile devices and networks, better features from banks, and increasing awareness among users were the main drivers of growth.

Most banks required customers to be registered online bank users before they could sign up for mobile banking. However, a 2009 survey of 500 mobile users showed that almost 60% of consumers not currently using online banking would be interested in using at least one mobile banking service.[15] One analyst commented that banks will "have mobile banking customers who are not necessarily online customers . . . it's not necessarily the same crowd."[16] In early 2010, Wells Fargo allowed customers to sign up for its mobile banking service, regardless of their online usage.

In spite of increasing interest in mobile banking, its use was still relatively small compared to other banking channels. According to an American Bankers Association survey, only 1% of respondents considered mobile as their preferred banking method, compared to 25% for online banking, 21% for branches, and 17% for ATM.[17] Primary reasons indicated by consumers for not using mobile banking included limited value of mobile banking, security concerns, and cost of data access (see **Exhibit 5**).

Mobile Payments

Mobile banking also expanded the mobile payment services market, where consumers could pay for goods and services using their mobile phones. First introduced in Singapore in 2001, this mode of payment was gaining popularity throughout Asia and Europe. In 2009, the U.S. market was relatively immature but showed signs of rapid growth. The mobile payments market could be categorized into three segments: local mobile payments, mobile commerce, and person-to-person (P2P) payments.

Local mobile payments Using a mobile device equipped with Bluetooth, radio frequency identification (RFID), infrared, or near field communication (NFC), a consumer could make a "contactless" payment to a merchant via his or her mobile phone. This method could substitute for the use of debit or credit cards and save consumers the extra step of signing a receipt or punching in a pin number. In 2009 the technology was in the early stages of development in the U.S.

Mobile commerce Mobile devices could be used for payment of goods and services even when a merchant was not located in physical proximity. One of the first uses of this service was for buying ringtones, virtual goods, and games. After the Haiti earthquake in January 2010, AT&T initiated a campaign that allowed its subscribers to donate $10 by sending a text message. Mobile operators (e.g., AT&T or Verizon) also started providing links to mobile shopping services such as mPoria and mShopper. Consumers could buy from online merchants and instead of using a credit card for payment, they could provide their mobile phone number. Mobile operators enabled these payments to their subscribers by adding the cost of these goods to the mobile phone bill, and benefited by retaining 30%–50% of the end-user transaction value. The industry witnessed the emergence of new players such as Zong, Boku, and Danal, which established strategic agreements between merchants and mobile operators. The U.S. market for virtual goods alone was $677 million in 2009 and was expected to grow to more than $2 billion by 2014 (see **Exhibit 6**).[18] It was expected that mobile commerce would soon expand from micro-payments of virtual goods to larger purchases.

Person-to-person (P2P) payments P2P mobile allowed an individual to send money to another person through the mobile channel. The best-known example in the U.S. was PayPal.[19] Founded in 1998 and acquired by eBay in 2002, PayPal had more than 78 million active accounts in 190 markets processing transactions in 19 currencies around the world by 2009. Although PayPal held large amounts of its users' money, conducted millions of financial transactions, and even offered credit and debit cards, it was not regulated like a bank. PayPal offered its users mobile accessibility so they could check account balances, shop and make bids and purchases, and send money. In 2008 the company reported revenues of $2.4 billion, an increase of 25% over 2007. The total value of transactions processed through PayPal was $60 billion, up 27% year-over-year. Nearly 9% of global e-commerce and 15% of U.S. e-commerce went through PayPal, according to one research firm.[20] The industry recently saw the emergence of new players such as P2P Cash and Obopay.

Another large opportunity for P2P payments was the global remittance market, where individuals transferred funds to their families nationally and internationally. With over $300 billion flowing from developed nations to developing countries, mobile contributions in this market were expected to grow from almost zero to more than 1% by 2014. In December 2008, Vodafone had joined forces with Western Union to enhance international mobile money transfer.[21]

Yet another untapped market was the population of poor people around the world who did not have any bank account. According to the Gartner Group, "The most profound impact of mobile banking and payment services is that they provide the nonbanking population with access to modern financial services, giving them tools to improve their living standards. For mobile operators, mobile payment can help attract and retain users and generate new revenue streams. For financial institutions, mobile payment is an opportunity to reach users who may have been previously unreachable, due to a lack of retail infrastructure."[22] In 2009, research group Frost and Sullivan estimated that almost 1.5 billion people in the world were unbanked, and almost 3 billion were under-banked.[23]

Mobile Banking at Bank of America

The Mobile Initiative

"There are four people born every second," Douglas Brown said, "but there are 32 mobile phones sold every second." Recognizing the rapid adoption of mobile phones, Brown had first made a case for mobile banking to senior management in early 2006. He explained:

> Mobile banking allows us to provide an unprecedented convenience to consumers so that they can do banking on the move. This rich experience will engage consumers, build our brand, and increase customer satisfaction and retention rates. We think mobile banking also has the potential to reduce costs significantly by reducing the number of calls to call centers.

The bank's senior management agreed with Brown's assessment, and in 2006 BofA decided to test its mobile banking service. After a controlled launch in February 2007, the service was rolled out nationally in May 2007. Customers who already had an online banking relationship with BofA could sign up for its mobile banking service. Through their mobile web browser, bank customers could check account balances and transaction information, pay bills, transfer money, locate an ATM or banking center, get directions, and receive mobile alerts.

BofA decided to go with a mobile web and, subsequently, a mobile banking app instead of SMS. Jen McDonald explained the rationale for this decision:

> Chase went for the SMS option where customers could check their balances through text messages. However, we saw mobile banking as an opportunity to provide a rich experience to customers and to build our brand. Although building mobile apps for several devices such as iPhone, Android, and BlackBerry is expensive and, for now, reaches a smaller market, we believe that it is better to start small but with a richer customer experience.

Early Results

Early adoption rates for the mobile banking app exceeded BofA's expectations; the 2007 launch of the iPhone helped immensely, with adoption quickly taking off. Within a year of the launch there were over one million active mobile users, and the bank was the first to offer an iPhone banking app in July 2008. By first quarter 2009, there were more than two million active users, and by the end of third quarter 2009, over three million active mobile users. By January 2010, the bank had nearly four million active mobile users, supporting over 859 handsets (see **Exhibit 7** for BofA mobile adoption).

Almost 99% of BofA mobile users viewed an account balance, and 90% viewed transaction-level details. The bank estimated over 15 million location searches annually and about $10 billion in annualized money movement, through bill pay and ebills fund transfers. Location services were also popular; as one happy user commented, "If you use their site from the iPhone and search for banking locations, you can click and it pops open Google Maps on the iPhone for you. I almost cried."[24] With more than 35% share of the market, BofA was clearly emerging as the leader in mobile banking.

One of the most active uses of mobile banking was among debit cardholders. Brown noted, "Consumers with low balances find mobile banking especially useful since it allows them to check their account balance in a retail store before they make a purchase on their debit card." David Carrel added, "Our surveys show that mobile banking has also helped improve the bank's perception as an innovator. In the time of financial crisis, this is extremely beneficial to the bank."

Soon after the mobile banking app launch, in October 2007, the bank conducted an online survey of 225 customers who had opened a checking account in the previous two months and used mobile banking at least once during that time. When asked about the importance of mobile banking in their choice of BofA, 24% said it was extremely important, and 33% said it was somewhat important. Satisfaction measures rose, with 76% reporting an increase in satisfaction as a result of using mobile banking. Other measures, including likelihood of recommending BofA to a friend or relative and frequency of usage of other channels, also scored favorably. While these early results were positive, Brown and McDonald continued to monitor the impact of mobile banking on potential cost reductions and improvement in customer satisfaction and loyalty.

Lessons from Online Banking

McDonald viewed BofA's online banking services as a benchmark for its current mobile banking initiative. BofA first offered online banking to its customers in the late 1990s, as a way to offer customers more convenience and potentially cut costs by migrating customers from branches and call centers to online interactions. This service was initially offered at a monthly charge of $5.95. Adoption, however, was slow. Customers were reluctant to try the new technology, citing the monthly fee, concerns over security, and the burden of signing up and entering all of their payment and transaction information. In 2002, BofA made its online banking service free, which helped adoption. McDonald drew several lessons from this experience:

> We found that control was an issue in addition to fees and new technology. Customers felt they would lose control. In fact, online banking gave them *more* control over their finances, but this wasn't intuitive at first. You have to keep in mind that people have their habits around their finances, how they pay their bills, keep their records, and so on. So there are a lot of behavioral factors that made people reluctant to switch then, which is probably true today for mobile.

The elimination of fees, increased awareness, and increased consumer comfort with online transactions helped adoption, and by the end of 2009, BofA had nearly 30 million active online banking users globally.

The introduction of online banking generally resulted in significant changes in how consumers used various bank channels—retail branches, call centers, ATMs, interactive voice response or IVR (computerized voice responses to callers), and online banking. BofA's experience with this channel shift was similar to those found in some research studies (see **Exhibit 8** for customer transactions by channel before and after online banking at a large national bank).[25] A time series study conducted by BofA for the period 2003–2006 showed that retention of online banking customers was higher compared to a control group (**Exhibit 9**). Customers who actively accessed their accounts online and who paid online bills showed the highest incremental benefit to the bank. As one BofA manager acknowledged, "Once a customer has entered all his or her bill pay information, and used online banking for a while to manage accounts, s/he is far less likely to leave to go to another bank."

The Future

Encouraged by early results of its mobile banking efforts, BofA planned to expand them through SMS. "About 15% of our mobile users have smartphones," McDonald noted, "so without SMS we are not equipped to handle the 85% of our customers who have regular phones." McDonald acknowledged that while SMS would expand the mobile market for BofA, it could also increase costs since the bank had to pay mobile operators for each SMS message. "We are actively monitoring our costs as well as the potential benefits of migrating customers to the mobile channel," McDonald said. Brown highlighted some of the future challenges for BofA's mobile banking effort:

> Mobile banking adds one more channel to our system. While it provides an opportunity, it also comes with the challenge of integration with our existing channels. Then there is always a concern about channel proliferation and how it may affect consumers. Given the evolving nature of mobile and the involvement of many third-party suppliers with different

technologies, it is hard to track customers' mobile transactions. Finally, we need to keep improving security on mobile devices, which is absolutely essential to build customer trust.

Digital Marketing

McDonald led the digital marketing team, which was organized as a center of excellence to support the bank's digital advertising and branding needs across all of its segments and product groups. While mobile banking was one of the key initiatives supported by McDonald and her team, they also managed mobile marketing, Bankofamerica.com, ATM advertising, search and display advertising, emails, and social media.

Mobile Marketing

"Our mobile channel serves a dual role for us. It allows us to provide banking services to our customers, and at the same time it is a new channel for advertising and promotion," explained McDonald. "One of our challenges in using this channel is to keep the right balance between customer service and promotion, since this is a much more intimate channel and we want to create good experience for our customers."

Mobile marketing was relatively new at BofA and started in early 2008 when Mark Hendrix, vice president, Digital Marketing—Mobile, and Jamie LaRose, vice president, Digital Marketing—Email and Mobile, argued for experimenting in mobile. Mobile marketing campaigns took several forms such as SMS messages about special offers (similar to email marketing), location-based marketing (e.g., telling customers in a bank branch that they could save time by banking online), interactive campaigns with outdoor media (e.g., a billboard in a football stadium asking fans to interact via mobile text messages), and display ads on mobile devices. Hendrix and LaRose used mobile as part of integrated multiple-channel campaigns (see **Exhibit 10** for two examples of mobile campaigns).

Overall, the experiments were very effective. McDonald's team found that mobile had a much higher click-through rate than email, five to six times higher than the channel average, although some of it could be attributed to the novelty of the medium. LaRose explained, "Customers are expecting our mobile messages." Hendrix added, "We've been successful from an engagement standpoint. Getting conversion numbers, however, is more difficult."

In 2008, Hendrix and LaRose started with a very small budget. "Basically we got some left-over budget from the email channel," explained Hendrix. The team's 2010 budget was expected to double, but the medium was still new and the mobile marketing budget represented less than 5% of the overall digital marketing budget for BofA.

Online Marketing

The bank was a heavy user of online marketing, which included search and display ads, videos at sites such as YouTube and Hulu, in-game applications for X-Box and other systems, and email marketing. "We are a top client of Google, and among the top 20 advertisers in the industry," explained Michael Bailey, senior vice president of Online Marketing. "In the past, a large percentage of our budget went into search for lead generation and customer acquisition. But now we spend significantly more on graphical display ads for integrated programs. Given the current market situation, we feel it is important for us to regain the trust of our customers."

The cost and effectiveness of online media varied, and posed a continuous challenge for Bailey and his team to find the optimal mix. Cost per thousand (CPM) impressions for mobile were about $10–$12, whereas they were in the range of $5–$15 for online, and $20–$25 for video. Advertising effectiveness was tracked in multiple ways including click-through rates, cost per action (e.g., how many checking accounts were opened), surveys, test-control experiments, and econometric studies.

Onsite Marketing

Bank branches, ATMs and the bank's own website provided ample opportunities for marketing and cross selling. "Our goal is to get the right message to the right people," explained Matt Burgener, senior vice president, Digital Marketing for Onsite and ATM. "We focus on brand as much as we can, instead of just call to action. During the financial crisis we were using our website to help our customers understand TARP and its impact on the bank. Today, we may encourage them to do mobile banking." With a very low variable cost for onsite advertising, the main challenge for Burgener and his group was to ensure that BofA used this channel effectively without over saturating consumers with messages.

Social Media

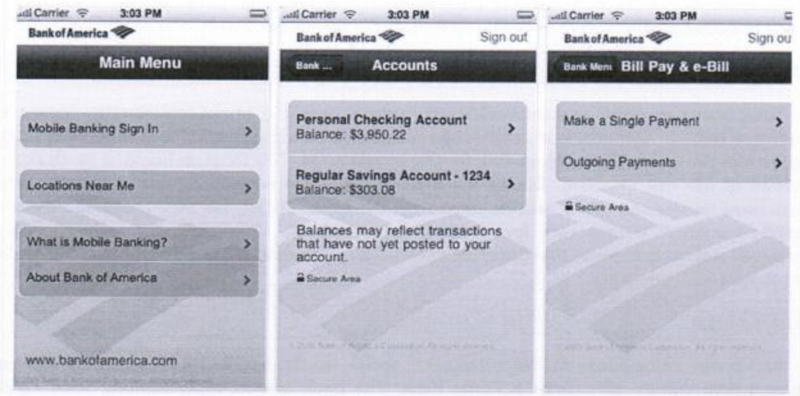
McDonald recognized the importance of social media but had to balance it against the conservative culture of a large national bank. The bank started experimenting with Facebook, YouTube, LinkedIn, and Twitter. While acknowledging the risk-averse culture of the bank, Kathryn Condon, senior vice president of Digital Marketing, noted, "In some respects it's riskier not to be there." By 2009, the bank was finishing what she referred to as "a discovery phase," and had established platforms on LinkedIn and Twitter.

Christopher Smith, senior vice president, Digital Marketing—SEO and Social, saw Twitter as a useful channel for customer service. He explained, "We could see the immense benefit of meeting people where they were, not closing down lines of communication. Twitter could offer a virtual lobby leader, closer to the interaction you'd have with an associate at the desk when you come into our branch." By January 2010, BofA had over 5,000 followers on Twitter who interacted with a team of six call-center representatives to resolve their queries and complaints. The team worked closely with the bank's risk and legal departments to determine which issues to address in this new medium. Security concerns and industry regulations also limited the use of Twitter and networking sites such as LinkedIn beyond some basic complaint-resolution issues.

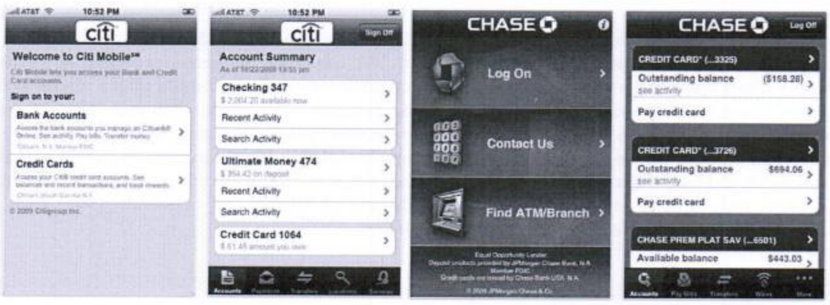
Looking Ahead

McDonald was well aware that her digital and mobile marketing strategies had to work within the context and culture of a large bank. The financial crisis had tainted all banks, and BofA was not immune from this effect. She also knew that the mobile banking market was evolving rapidly, and could have a dramatic impact on BofA and the entire financial services industry. "We continuously look at ways in which we may effectively use new technology to make banking easier, faster, and more convenient for consumers," she said, turning to Brown and Carrel. "In the long run, how do we position ourselves in this fast-changing industry? And in the short run, what do we tell our line-of-business managers? Should we increase the functionality of our apps, build new apps, or refuse to add complexity to our current app?"

Exhibit 1 Mobile Banking Apps for Select Banks



- Bank of America offered a mobile banking app that allowed customers to check balances, make transfers, pay bills, and locate ATMs and branches.



- Citibank's mobile banking service allowed customers to check balances, transfers funds, and pay bills. It also allowed customers to check their credit card balances, pay credit card bills, and track their credit card rewards.

- Chase provided mobile banking in three forms: SMS, web browser, and app. Basic services such as account balances, transaction history, and credit card due dates could be viewed by SMS text. The app and mobile-browser versions enabled customers to check balances, pay bills, transfer funds, make wire transfers, and find ATM and branch locations.

Exhibit 1 (continued) Mobile Banking iPhone Apps for Select Banks

- Wells Fargo Mobile allowed customers to check balances and make transfers.
- Wells Fargo CEO Mobile was designed for corporate and business customers who, in addition to typical banking activities, could monitor balances in corporate bank accounts, approve outgoing payments, and manage exception items. (Exception items included illegible/unreadable and previously processed electronic items as well as electronic items from banks located outside the U.S. and not payable through a U.S. bank.)

- Citi Mobile enabled customers to check account balances and transfers, and pay bills for their bank account as well as credit cards.
- Citi Foreign Exchange Rates allowed customers to view current exchange rates for more than 40 currencies.

- PNC Mobile enabled customers to check balances, review recent activities, transfer funds, pay bills online, and locate the nearest retail branch or ATM.
- PNC Virtual Wallet, geared towards Generation Y customers, provided similar services along with additional tools designed to make banking easier for younger consumers, including a calendar function offering monthly, weekly, or daily views of incoming funds (paycheck) and money needed to pay bills, overdraft warnings ("danger days"), a money bar showing funds coming in/going out and a slider tool allowing for easy transfers across the consumer's three accounts, and a savings engine, aimed to help customers save for short- or long-term goals.

Source: Adapted from Apple Apps Store; www.online.citibank.com, www.chase.com, www.wellsfargo.com; www.online citibank.com; www.pnc.com, casewriter research.

Exhibit 2 Major Competitors of Bank of America

Bank of New York Mellon operated in 34 countries. It provided asset management, asset servicing, wealth management, and broker/dealer advisory services to institutions, corporations, and high-net-worth individuals. The company had 42,000 employees and as of December 31, 2008, $1.1 trillion assets under management.

JP Morgan Chase & Company was a leader in investment banking, small business and commercial banking, asset management and private equity, and in providing financial services for consumers. The company's legacy institutions included J.P. Morgan, Chase Manhattan, Chemical, Manufacturers Hanover, Bank One, First Chicago, and National Bank of Detroit. In 2004 J.P. Morgan Chase & Co. and Bank One merged to form JPMorgan Chase & Co. In 2008, JPMorgan Chase & Co. acquired the insolvent Bear Stearns., thereby strengthening its capabilities across a broad range of businesses, including prime brokerage, cash clearing, and energy trading globally. The company had assets of about $2 trillion, more than 200,000 employees, and it operated in more than 60 countries.

Wells Fargo & Company, headquartered in San Francisco, was a diversified financial services company providing banking, insurance, investments, mortgages, and consumer finance through more than 10,000 Wells Fargo and Wachovia stores, 12,000 Wells Fargo and Wachovia ATMs, the Internet, and other distribution channels across North America and internationally. According to the company, one in three households in the U.S. conducted business with it. Wells Fargo had $1.2 trillion in assets and nearly 280,000 employees. As of September 2008, the company ranked fourth in assets among its peers in the U.S.[26]

Citigroup was an international financial conglomerate with operations in consumer, corporate, investment banking, and insurance. The company, hard hit by the subprime mortgage crisis, lost $28 billion in 2008. While the company made progress in 2009, it still managed to lose $1.6 billion. In July of 2009, the firm was effectively nationalized, with billions of dollars in bailout money converted into a 34% ownership stake for the U.S. government. At the end of 2009, Citigroup had about $1.9 trillion in assets and employed about 265,000 workers.

PNC Financial Services offered a wide range of products and services to individual consumers, small businesses, corporations, and government entities. The firm provided retail banking to more than 6 million consumers and small business customers at its 2,600 branches and 6,400 ATMs located across 14 states and the District of Columbia. PNC also provided corporate and institutional banking services, and wealth management. With $2 trillion in total fund assets serviced and 72 million shareholder accounts, PNC Global Investment Servicing was a leading provider of processing, technology, and business intelligence services to asset managers, brokers/dealers, and financial advisors worldwide. In addition PNC held about a third of the ownership interest in BlackRock, a large publicly traded asset and investment management firm in the U.S.[27]

Source: Casewriter research.

Exhibit 3a Five-Year Summary of Selected Financial Data ($ in millions, except per share information)

	2008	2007	2006	2005	2004
Income statement					
Net interest income	$45,360	$34,441	$34,594	$30,737	$27,960
Non-interest income	27,422	32,392	38,182	26,438	22,729
Total revenue, net of interest expense	72,782	66,833	72,776	57,175	50,689
Provision for credit losses	26,825	8,385	5,010	4,014	2,769
Non-interest expense, before merger and restructuring charges	40,594	37,114	34,988	28,269	26,394
Merger and restructuring charges	935	410	805	412	618
Income before income taxes	4,428	20,924	31,973	24,480	20,908
Income tax expense	420	5,942	10,840	8,015	6,961
Net income	4,008	14,982	21,133	16,465	13,947
Performance ratios					
Return on average assets	0.22%	0.94%	1.44%	1.30%	1.34%
Return on average common shareholders' equity	1.80	11.08	16.27	16.51	16.47
Return on average tangible shareholders' equity	5.31	25.94	39.06	32.30	30.98
Total ending equity to total ending assets	9.74	8.56	9.27	7.86	9.03
Total average equity to total average assets	8.94	8.53	8.90	7.86	8.12
Per common share data					
Earnings	$0.56	$3.35	$4.66	$4.10	$3.71
Diluted earnings	0.55	3.30	4.59	4.04	3.64
Dividends paid	2.24	2.40	2.12	1.90	1.70
Market capitalization (year end)	$70,645	$183,107	$238,021	$184,586	$190,147

Source: Bank of America 2008 Annual Report, http://media.corporate-ir.net/media_files/irol/71/71595/reports/2008_AR.pdf, accessed January 26, 2010.

Note: The above includes allowance for loan and lease losses and the reserve for unfunded lending commitments. Balances and ratios do not include nonperforming LHFS (loans held for sale) and nonperforming AFS debt securities, or loans measured at fair value in accordance with SFAS 159.

Exhibit 3b Business Segment Total Revenue and Net Income (dollars in millions)

	Total Revenue[a]		Net Income (Loss)	
	2008	2007	2008	2007
Global Consumer and Small Business Banking[b]	$58,344	$47,855	$4,234	$9,362
Global Corporate and Investment Banking	13,440	13,651	(14)	510
Global Wealth and Investment Management	7,785	7,553	1,416	1,950
All Other[b]	(5,593)	(477)	(1,628)	3,150
Total FTE basis	73,976	68,582	4,008	14,982
FTE adjustment	(1,194)	(1,749)	--	--
Total Consolidated	$72,782	$66,833	$4,008	$14,982

Source: Bank of America 2008 Annual Report, http://media.corporate-ir.net/media_files/irol/71/71595/reports/2008_AR.pdf, accessed January 26, 2010.

[a] Total revenue is net of interest expense, and is on a FTE basis for the business segments and *All Other*. To derive the FTE basis, net interest income was adjusted to reflect tax-exempt income on an equivalent before-tax basis with a corresponding increase in income tax expense. For purposes of this calculation, the bank used the federal statutory tax rate of 35%.

[b] GCSBB is presented on a managed basis with a corresponding offset recorded in "All Other."

Exhibit 4a Mobile Banking Users (U.S.)

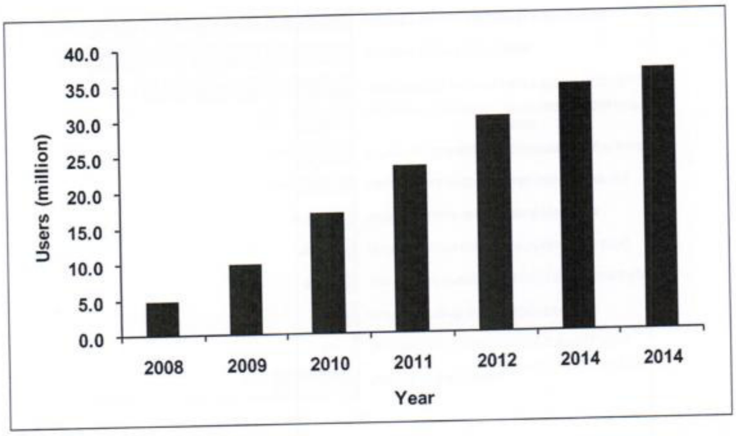
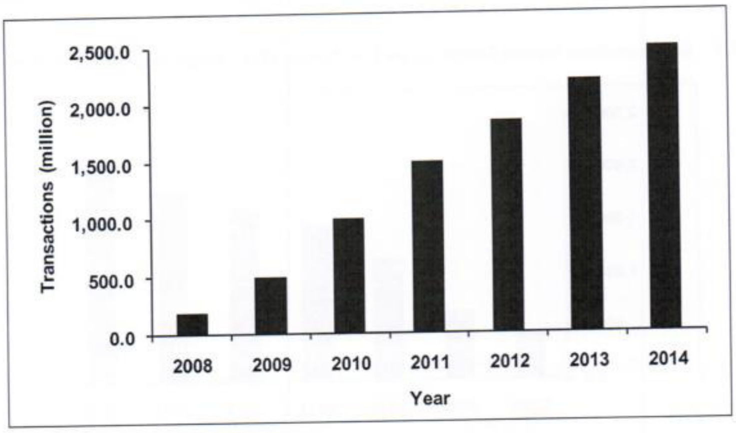


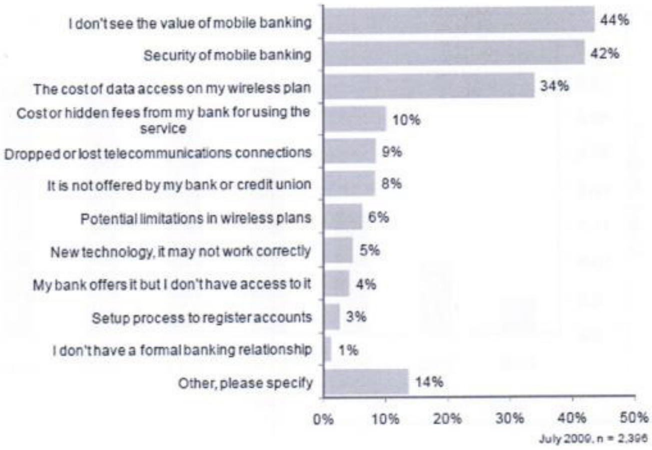
Exhibit 4b Annual Mobile Banking Transactions (U.S.)



Source: Adapted from "An Insight into the U.S. Mobile Financial Services Markets," Frost and Sullivan, 2009, accessed February 2010.

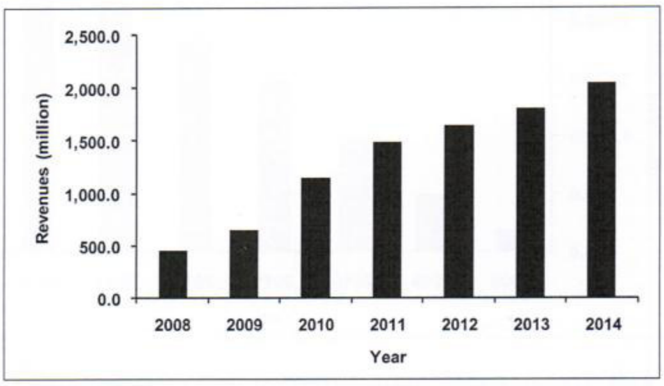
Note: Data for 2009–2014 are estimates.

Exhibit 5 Primary Reasons Consumers Do Not Use Mobile Banking (July 2009)



Source: Javelin Strategy & Research, 2009, http://www.javelinstrategy.com/uploads/files/925.MF_2009JavelinMobileBankingScorecardSampleReport.pdf.

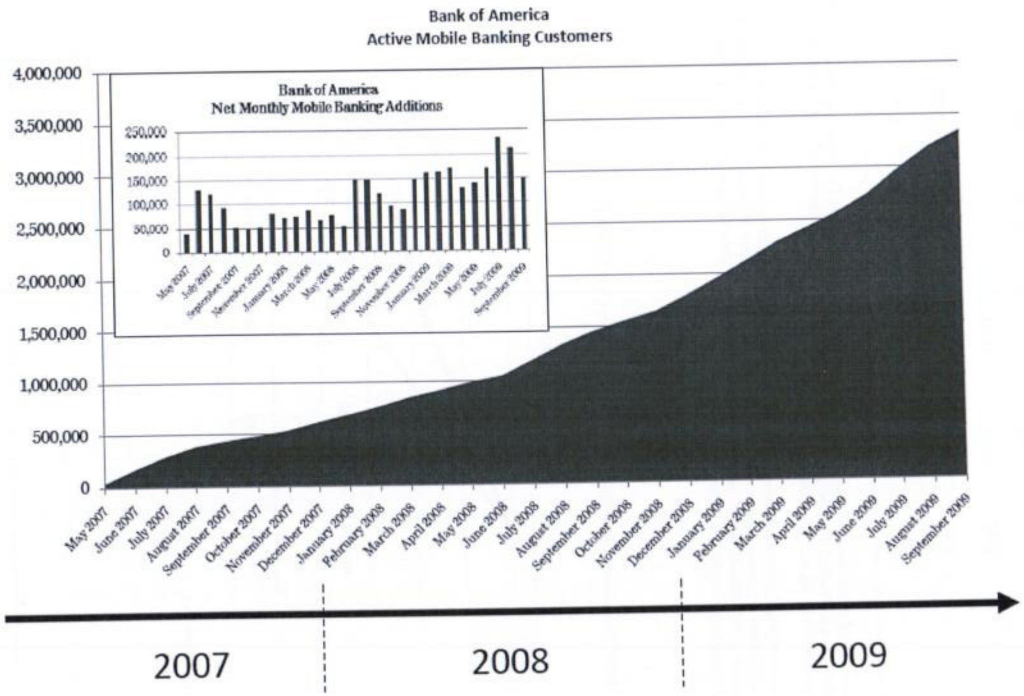
Exhibit 6 Revenues from Virtual Goods for the U.S. Mobile Financial Service Market ($ in millions)



Source: Adapted from "An Insight into the U.S. Mobile Financial Services Markets," Frost and Sullivan, 2009, accessed February 2010.

Note: Data for 2009–2014 are estimates.

Exhibit 7 Bank of America—Mobile Adoption over Time



Source: Company documents.

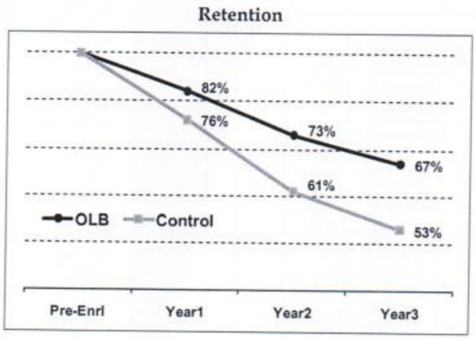
Exhibit 8 Average Monthly Transactions per Customer by Channel (June 2006)

	Control group		Passive Adopters		Active Adopters	
	Before	*After*	*Before*	*After*	*Before*	*After*
Branch	1.24	1.34	1.51	1.73	1.75	2.28
Call center	0.18	0.22	0.19	0.24	0.31	0.35
ATMs	2.12	2.30	2.48	2.70	3.41	3.54
IVR	1.41	1.57	1.51	1.40	2.90	1.45
Online	0.00	0.00	0.00	1.39	0.00	9.91

Source: Adapted from Dennis Campbell and Frances Frei (2010), "The Cost Structure, Customer Profitability, and Retention Implications of Self-Service Distribution Channels: Evidence from Customer Behavior in an Online Banking Channel," *Management Science*, 56, no. 1, pp. 4-24.

Note: The "control group" represents customers with no transactions in the online channel after enrollment in the channel; "passive adopters" represent users with fewer than the median number of transactions in the online channel after enrollment; and "active adopters" represent those who had greater than the median number of transactions in the online channel after enrollment in the channel.

Exhibit 9 Impact of Online Banking (OLB) on Retention (April 2008)



Source: Company documents.

Exhibit 10 Examples of BofA Mobile Marketing Campaigns

Mobile 3rd Party in-app marketing

Mobile Microsite

- The Get More integrated campaign ran in August 2009 and was intended to encourage users to get information about BofA products and services from their mobile phones. The ad sent users to a mobile microsite that mimicked the look and feel of BofA's online site. When clicked, the "learn more" link took users to a full description of the program. Users could also request additional information on the product via email, click to call a sales specialist, or enter their zip code to find the closest banking center.

- Of the 75,000 visitors to the mobile site, about 8% closed the loop (requested an email or clicked to call); in addition, there were 800 requests to find the closest banking center, 1220 "email me more information" requests, and 1100 click-to-calls to make direct contact with a BofA service representative.

Exhibit 10 (continued) Examples of BofA Mobile Marketing Campaigns

- Mobile Morris, launched in June 2009 and directed at students, leveraged a multi-channel effort to drive mobile traffic. Mobile call-to-actions were placed on various channels, including ATMs, third-party platforms, online, and in games (Xbox). The ads sent users to the online mobile experience, which would differ based on the device. Users were able to fulfill the call to action directly on their phone via an 800-number.

Source: Company documents.

Endnotes

[1] Unless noted otherwise, this section draws on Erik Oja, "Banking," *Standard & Poor's Industry Surveys*, December 24, 2009.

[2] Brad Strothkamp, "Trends 2009: North American Retail Banking eBusiness and Channel Strategy," Forrester Research, February 19, 2009, via Forrester Research, accessed December 2009. See also Erik Oja, "Banking," *Standard & Poor's Industry Surveys*, December 24, 2009, p. 16, via NetAdvantage, accessed January 2010.

[3] Forrester Research, "How U.S. Consumers Choose a Bank in a Crisis," November 5, 2008, cited in Brad Strothkamp, "Trends 2009: North American Retail Banking eBusiness and Channel Strategy," Forrester Research, February 19, 2009, via Forrester Research, accessed December 2009.

[4] History of Bank of America taken from text from Hoovers, Inc., and company website, except where otherwise sourced.

[5] Hoover's, Inc., www.hoovers.com, accessed February 2010.

[6] Binyamin Appelbaum, "Bank of America to repay U.S.; Firm will be first to reimburse taxpayers completely for bailout," *The Washington Post*, December 3, 2009, p. A25, via Factiva, January 22, 2010.

[7] Bank of America 2008 10-K Report, p. 22, http://media.corporateir.net/media_files/irol/71/71595/reports/2008_AR.pdf, accessed January 25, 2010. (The bank took an additional $20 billion in a second round of TARP, following the acquisition of Merrill Lynch.)

[8] "Ken Lewis calls taking $20B gov't loan a mistake; will stay CEO until loan is repaid," *Associated Press Newswire*, March 2, 2009, via Factiva, accessed January 25, 2010.

[9] Dan Fitzpatrick, "Crisis on Wall Street: BofA's Mantra: We're Not Citigroup—Lewis Takes Shot at Rival to Highlight Bank's Strength; Fighting Nationalization," *The Wall Street Journal*, March 10, 2009, C3, via Factiva, accessed March 2010.

[10] This section draws heavily from Frost and Sullivan, "An Insight into the U.S. Mobile Financial Services Markets," 2009, via Frost & Sullivan, accessed February 2010.

[11] TowerGroup research, 2009. These costs can vary depending on the allocation of fixed costs and capacity utilization of a channel. See also, "New U.S. Mobile Banking Survey Reveals Untapped Market among Offline Banking Consumers," *AllBusiness*, November 5, 2009, http://www.allbusiness.com/mediatelecommunications/telecommunications/13406091-1.html, accessed February 6, 2010.

[12] TowerGroup research, 2009.

[13] Frost and Sullivan, "An Insight into the U.S. Mobile Financial Services Markets," 2009, via Frost & Sullivan, accessed February 2010.

[14] Frost and Sullivan, "An Insight into the U.S. Mobile Financial Services Markets," 2009.

[15] "New U.S. Mobile Banking Survey Reveals Untapped Market among Offline Banking Consumers," *AllBusiness*, November 5, 2009, http://www.allbusiness.com/media-telecommunications/telecommunications/13406091-1.html, accessed February 6, 2010.

[16] Nicole Sturgill of TowerGroup, cited in Daniel Wolfe, "Banks' Eureka Moment on Mobile Services," *American Banker*, February 9, 2010, http://www.americanbanker.com/issues/175_26/eureka-moment-on-mobile-svcs-1013290-1.html, accessed February 2010.

[17] As reported in "Internet is Top Banking Method: Mobile still niche preference," *eMarketer*, September 28, 2009.

[18] Frost and Sullivan, "An Insight into the U.S. Mobile Financial Services Markets," 2009, via Frost & Sullivan, accessed February 2010.

[19] eBay Inc. 2009 10-K Report and PayPal website https://www.paypal-media.com/documentdisplay.cfm?DocumentID=2260, accessed January 27, 2010, unless otherwise noted.

[20] PayPal website, http://files.shareholder.com/downloads/PAY/0x0x114524/3de5bbd9-e30b-4fd6-95c2-11bb0deb3566/PAY_WebDoc_2260.pdf, accessed January 28, 2010.

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[23] "Insight into the U.S. Mobile Financial Services Markets," Frost and Sullivan, 2009, via Frost and Sullivan, accessed February 2010.

[24] Company documents.

[25] Dennis Campbell and Frances Frei (2010), "The Cost Structure, Customer Profitability, and Retention Implications of Self-Service Distribution Channels: Evidence from Customer Behavior in an Online Banking Channel," *Management Science* 56, no. 1, pp. 4–24.

[26] https://www.wellsfargo.com/downloads/pdf/about/wellsfargotoday.pdf, accessed January 22, 2010.

[27] PNC Financial Services Group website, https://www.pnc.com/webapp/unsec/NCProductsAndService.do?siteArea=/pnccorp/PNC/Home/ About+PNC/Our+Organization/Business+Overview, accessed January 22, 2010.