

Communications of the Association for Information Systems

Volume 24

Article 47

6-1-2009

Does IT Payoff? Strategies of Two Banking Giants

Ali Farhoomand

The University of Hong Kong, ali@business.hku.hk

Minyi Huang

The University of Hong Kong

Follow this and additional works at: <https://aisel.aisnet.org/cais>

Recommended Citation

Farhoomand, Ali and Huang, Minyi (2009) "Does IT Payoff? Strategies of Two Banking Giants," *Communications of the Association for Information Systems*: Vol. 24 , Article 47.

DOI: 10.17705/1CAIS.02447

Available at: <https://aisel.aisnet.org/cais/vol24/iss1/47>

This material is brought to you by the AIS Journals at AIS Electronic Library (AISeL). It has been accepted for inclusion in Communications of the Association for Information Systems by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Communications of the Association for Information Systems

CAIS 

Does IT Payoff? Strategies of Two Banking Giants

Ali Farhoomand

School of Business, The University of Hong Kong

ali@business.hku.hk

Minyi Huang

Asia Case Research Centre, The University of Hong Kong

Abstract:

Banks have long been among the most intensive users of information technology (IT). Globalization has further accentuated banks' reliance on IT, leading to further increase in their IT investment. It is not all that clear, however, whether these investments pay off. This case brings to the fore the complexities involved in measuring IT investment by comparing and contrasting the IT strategies of two of the world's largest banks: HSBC and Citigroup. Will the IT investment strategies adopted by HSBC and Citigroup enhance their operational efficiency or strategic positions? Facing financial turmoil, HSBC and Citigroup adopted different IT strategies. Which of them is more appropriate? Which of the two banks will have higher returns on their IT investments in the long run? How should they measure such returns?

Keywords: IT investment, IT evaluation, IS strategies, banking industry

Volume 24. Article 47. pp. 821-836. June 2009

Editor's Note: A teaching note for this case can be obtained from ali@business.hku.hk. Only active MIS faculty who are currently listed in the AIS Faculty Directory are eligible to receive the teaching note.

I. INTRODUCTION

You can see the computer age everywhere but in productivity statistics.

- Robert Solow [1987]

During the last 20 years, there had been a debate concerning whether or not IT paid off in the long run. While some questioned the positive contribution of IT to productivity, others attributed the so-called IT paradox to measurement methodology and the lack of measurable data such as increased quality, variety, customer service, speed and responsiveness. To make matters worse, a controversial article published in Harvard Business Review argued that as IT was being commoditized, the opportunities of gaining IT-based competitive advantages were rapidly disappearing [Carr 2003]. If this were true, then companies should spend less, wait longer to invest in more matured technologies and should be more careful about the costs of IT investments.

Financial services firms had long been among the most intensive users of information technology (IT), starting in 1867 when the stock ticker began bringing current Wall Street information to Main Street. Starting in the 1980s, the development of the Internet and telecommunication technologies had further facilitated the development of new banking products and introduced alternative delivery and distribution channels. It was estimated that IT spending accounted for 20-25 percent of non-interest costs and approximately six percent of annual revenue for financial institutions [Kauffman and Weber 2002]. The global banking industry's IT spending reached US\$358 billion in 2008 [see Appendix I for IT Spending statistics]. Despite these mammoth investments, it is not all that clear whether IT investment pays off for banks. It is also unclear whether these investments would improve just the operational efficiency of banks or if they would also enhance their strategic positioning and sustainable competitive advantage. This case attempts to shed light on these two important issues by evaluating the IT investments at HSBC and Citigroup, two large global banks of similar size but with different IT strategies. Would the IT investment strategies adopted by HSBC and Citigroup enable them to improve their financial performance in the future? Which of the two banks would see higher returns on their IT investments in the long run? How should they measure such returns?

II. GLOBAL BANKING INDUSTRY

Three tectonic forces had reshaped the strategic landscape of the financial industry in the previous two decades: deregulation, the advent of new technologies, and globalization of business. Deregulation, which began in the 1980s with the removal of many important regulatory barriers to international banking, allowed banks to expand the scope of their operations globally. The advent of the Internet and advanced telecommunication technologies allowed financial institutions to operate more easily and cost effectively across borders. Finally, while globalization of business had led to a surge in demand for international financial services, it also intensified competition, leading to declining interest margins and fee incomes.¹

Since the subprime mortgage crisis in the U.S. began in 2007, financial institutions had already seen US\$752 billion written down by the end of 2008 [Deloitte 2009]. In the face of such sweeping forces, banks were under pressure to find ways to reposition their strategic posture through consolidation, merger and acquisition; reduce cost, strengthen risk management and improve operational efficiency; deal with an increasingly vigilant regulatory body and governments worried about not only money laundering and terrorism but also liquidity risks; and align their strategies to meet customers' ever increasing needs and demands.

Consolidation

In the United States, industry consolidation started in the 1980s after the laws and regulations restricting banks to operate exclusively within the state of origin were lifted. In 2008, the five largest U.S. banks already controlled 64 percent of the country's banking assets, compared to less than 29 percent in the previous decade. Similarly, larger institutions were created as a result of cross border mergers and acquisitions across the globe. The assets of the largest 1,000 global banks reached US\$63.8 trillion by the end of 2005, having nearly doubled in 10 years. Banks used consolidation to rationalize their operations and lower costs. For example, the high fixed costs of maintaining

¹ For example, Deloitte reported that net interest margins of the 70 largest European banks fell from 2.0 percent in 2004 to approximately 1.8 percent in 2006. Non-interest fee growth rates for U.S. banks, which topped out in the late 1990s at more than 20 percent, also declined to just 4.8 percent by the end of 2005.

and operating a merged bank's IT systems (such as credit card and account management systems) could be spread over more users. Mergers and acquisitions also allowed banks to penetrate new markets and to introduce innovative products. For example, global banks were able to access huge populations in China, India and elsewhere in this way. Deloitte estimated that the number of middle class consumers in India would reach 250 million by 2010 with 22 million new customers coming into the market each year. Similarly, the credit card market in China could reach 75 million by 2010 [Deloitte 2007]. Moreover, as the financial turmoil deleveraged banks with more risk control and lower returns on equity and clients could choose their financial provider more carefully, weaker players in the banking industry were either eliminated or absorbed by larger and stronger players. Indeed, the global banking industry still had the scope for consolidation, as the 20 leading banks had less than 40 percent of the total market capitalization among banks, much lower than the average 67 percent in the key industries [Dietz et al. 2008].

Offshoring

In the 2000s, offshoring continued to grow in importance as a way to lower costs and tap into a skilled global workforce. It was estimated that banks' offshore IT spending would increase from six percent of the industry's US\$44 billion total annual IT budget to 30 percent by 2010 [Quittner 2006]. Cost saving was the main motive for offshoring: Deloitte Research estimated that nearly half of all offshoring operations could save more than 40 percent of the cost of running the same operation onshore [Deloitte 2005]. This trend was expected to continue. Facing the economic downturn during the financial turmoil along with the tighter risk control required and lower expected returns on equity, banks had to pursue cost efficiencies more aggressively to maintain their profit margins. In addition to the lower labor cost of offshoring, banks also benefited from a skilled and well educated workforce available overseas to improve their customer services. More than half of the top 50 U.S. financial institutions used offshore IT consulting services in 2006 and nearly 20 percent more planned to start using them [Quittner 2006].

Re-regulation

A top agenda for governments in 2009 was regulatory reform to prevent banks from undertaking risky loans and investments which caused the worst financial turmoil since the 1930s. For example, at the G20 summit held in London in April 2009, the world's leaders agreed to a deal limiting the unregulated financial institutions' (e.g., Hedge funds) freedom to trade and lend, to prevent banks from encouraging their staff to do risky deals and to impose tighter control of credit rating agencies. Banks were also facing the growing burden of complying with tough and complicated government rules and regulations ranging from Sarbanes-Oxley to antilaunching regulations. As evidenced by several high profile enforcement actions, banks realized the importance of complying with antilaunching regulations to avoid potential financial risks and damage to their reputations. Moreover, as regulators around the world constantly raised the bar by adopting ever more stringent requirements and coordinating with each other in their supervision of far flung global institutions, compliance became increasingly complex and challenging. Multifactor authentication was placed at the top of banks' technology priority list in 2007, calling for tight business process management, event detection for potential fraudulent activities, notifying legitimate customers of these activities and taking immediate action to prevent fraudsters from succeeding [Eckenrode 2007].

Changing Customer Needs

Facing intensified competition, banks had to put customer needs at the core of their strategies. For example, while drastic cost cutting eliminated many bank branches during the 1990s, many banks were re-expanding their branch networks across the globe. U.S. banks opened 3,459 new branches in 2006 while closing 1,476 locations, a ratio of 2.3 openings to each closing, representing significant expansion compared to the open-to-close ratios of 1.5 in 2003 and 1.8 in 2004. At the same time, global banks had to develop branch strategies tailored to the new markets they entered, focusing on the usage of self service channels, new branch formats, and the increasingly competitive retail banking environment [Deloitte 2007]. In general, there was a call for financial institutions to motivate staff on both the customer related and financial metrics in order to win the battle for growth [PricewaterhouseCoopers 2006]. This was further complicated by the outbreak of the financial crisis. Banks were also required to improve customer protection and strengthen risk management in order to restore customers' confidence and trust. Thus, the products they offered had to be simple and transparent with more predictable returns.

HSBC and Citigroup, two of the world's largest financial institutions were trying to grapple with these significant challenges. Of particular interest was the way they were investing in IT as a means of improving the provision and delivery of their products and services across the globe, cutting costs, and entrenching their strategic positions [see Appendix II for comparable statistics]. The efficacy of their IT spending was of great importance, considering the two companies' combined IT annual spending was over US\$8 billion in 2006. Were they spending their money wisely? And if they were, which one of these two banking giants had the better IT strategy?

III. HSBC HOLDINGS PLC

The Hongkong and Shanghai Banking Corporation Limited, the original predecessor of the HSBC Group, was founded by Thomas Sutherland in Hong Kong in 1865 with offices in London and Shanghai and an agency in San Francisco. In 1991, HSBC Holdings started its shares trading on the London and Hong Kong stock exchanges, followed by listings in New York, Paris and Bermuda. In 2008, it had approximately 210,000 shareholders in 120 countries and territories.

Over time, the HSBC Group, headquartered in London, had developed into one of the largest banking and financial institutions in the world, with over 9,500 offices in almost every corner of the globe. Over 320,000 employees provided services to approximately 125 million customers in 86 countries and territories, with over 29 million e-customers. The company carried out its operations through different subsidiaries, including HSBC Bank Plc, HSBC Bank USA, HSBC Latin America, HSBC Mexico and the Hongkong and Shanghai Banking Corporation.

HSBC's operational philosophy was based on outstanding customer service, effective and efficient operations, strong capital and liquidity, a prudent lending policy and strict expense discipline. Similarly, HSBC's key business values emphasized integrity at all levels, truth and fair dealing, hands on management, minimum bureaucracy, fast decision making and implementation, putting team interests ahead of individuals', authority delegation with accountability, compliance with laws and regulations, and good reputation [HSBC 2006a].

Between 1998 and 2003, HSBC Holdings followed the strategy of "Managing for Value," with the objective of providing a satisfactory return on shareholder capital. In 1999 it created its global brand, HSBC, and the company's hexagonal logo, and launched a marketing campaign to be "your world of financial services." In 2002, it launched a very successful campaign to be "the world's local bank," with the aim of reaffirming its global outlook and differentiating its brand from those of its competitors.

Later, the company launched a new strategic plan called "Managing for Growth," seeking to become the world's leading financial services company, striving to be "preferred, admired and dynamic" and to be "recognized for giving the customer a fair deal" [HSBC 2007]. There were eight strategic imperatives in this plan focusing on brand, personal financial services, consumer finance, commercial banking, corporate, investment banking and markets, private banking, people, and Total Shareholder Return (TSR).

HSBC's profit was shrinking during the financial turmoil. Its net profit dropped from US\$19.133 million in 2007 to US\$5.728 million in 2008. In early 2009, HSBC used a stock offering to raise nearly US\$18 billion as a way to boost its capital levels and possibly fund new acquisitions.

In its 2008 Annual Report HSBC described its strategic direction as "combining the largest emerging markets banking business and a uniquely cosmopolitan customer base with an extensive international network and substantial financial strength." To achieve this, HSBC relied on the following three business models:

- Develop global business with an emphasis on developing market connectivity. That is, Global Banking and Markets, the largest segment of Commercial banking, and Private Banking, aiming at the mass affluent customers.
- Develop local business by improving efficiency globally. In other words, the small business segment of Commercial Banking and the mass market segment of Personal Financial Services.
- Develop global product platforms to build efficiency, expertise and brand.

IT Investment Strategy

We do business all around the world because of our technology, which supports our promise to be the world's local bank. We are already an IT leader in some spaces, particularly the Internet and customer recognition.

- Ken Harvey, group CIO for HSBC [Banks, 2006]

Our information technology strategy is based on harnessing the power of new technology to provide new and better services for our customers and improving our own operating efficiency. As a global banking and financial services organization, the challenge of information technology is to link the different parts of the Group more closely together.

- HSBC 1996 Annual Report

As “the world’s local bank”, HSBC promoted rapid decision making and local accountability; its subsidiaries were locally incorporated banks, each with its own balance sheet. The head office was only responsible for managing essential functions such as human resource management, strategic planning, legal and administrative issues and financial planning and control. The HSBC Universal Banking System (HUB), the company’s platform for running IT applications and a multifaceted risk and credit control system, was located in London. HUB was deployed in 63 countries to manage and implement the HSBC Group’s projects and provide consultation services to meet local needs. HUB was responsible for planning, coordinating and liaising with group entities.

HSBC had regional technology services consisting of different departments meeting local technology needs [see Appendix III]. For example, HSBC Technology Services Asia-Pacific was made up of over 30 major departments, with each department responsible for a distinct area of system development. They were grouped by application types and by end users served:

- IT Development was responsible for the design and development of personal finance services and commercial banking as well as the deployment of enterprise data.
- IT Operations was made up of computer operations, infrastructure and telecommunication teams.
- IT General covered IT functional areas including IT architecture, information security, IT quality, and finance and planning.
- Corporate, Investment Banking and Markets (CIBM) IT HK was responsible for supporting and overseeing IT activities for more than 20 Asia-Pacific countries and territories.

Starting in 2006, HSBC used *the number of customer transactions processed and the reliability and resilience of systems measured in terms of service availability targets* to measure IT performance. The processed customer transactions measured the extent to which customers interacted with HSBC through electronic channels. According to its 2008 Annual Report, the results between 2005 and 2008 had shown a decrease in staff assisted transaction and an increase in self service transactions as a result of the implementation of One HSBC Technologies. As the number of Internet transactions decreased in 2008, HSBC planned to control the costs of processing IT transactions to a level below the volume increase. In regard to meeting the promised service level by HSBC’s IT functions, the results between 2005 and 2008 also indicated a trend of improving service performance.

In order to align IT and worldwide operations more closely together, HSBC merged the role of CIO and chief operating officer (COO) in September 2008. Michael Geoghegan, CEO for HSBC, considered it a move to “re-engineer customers’ experience of HSBC and at the same time drive down the unit cost of production.” [Flinders 2008b]. Moreover, facing the financial turmoil, instead of cutting back on IT spending, HSBC decided to increase IT investments. In the words of Ken Harvey, “(the) technology strategy is pivotal to dropping the overall cost base of the business” [Flinders 2008b].

Operational Investments

In 1996 HSBC opened its first offshore processing centre in Guangzhou, China. Thanks to a continued governance commitment from top management and from employees with a wide breadth of expertise, the company established IT and back-office operations in 10 Asian countries in 2002. By April 2007, there were more than 18,000 employees across Asia catering to the divisions in North America, Europe, Asia-Pacific and the Middle East [Vashistha 2007]. The Global Process Team, as a focused and dedicated corporate governance body, continually worked to meet strategic and tactical objectives.

In 2002, the company set up HSBC Global Technology (GLT) as part of the HSBC Group in Pune, India. Its mission was to provide timely and cost efficient quality technology solutions and support to the HSBC Group. Following the successful establishment of GLT in India, HSBC expanded and established a Global Technology Centre in China (GLTc) and another in Brazil (GLTb).

HSBC took on more IT staff to support service improvement projects and online banking. Staff costs fell by US\$30 million due to a reduction in the full time equivalent headcount, as back-office processing functions were transferred to HSBC’s Group Service Centers in India and China [HSBC 2002]. By the end of 2002, 1.2 million customers had registered for personal Internet banking, with a further 177,000 customers registered for TV banking.

In 2003 the company completed the merger of HSBC and HSBC Finance Corporation's technology services teams in North America, making possible the coordination of comprehensive global credit card technology. HSBC Finance Corporation's use of HSBC's Group Service Centers (GSCs) was expanded, leading to an annual savings in excess of US\$67 million. In spite of this phenomenal savings, the creation of the North American technology company cost over US\$1 billion. In 2007, with the opening of six new GSCs, the GSCs were located in five Asian countries, employed 30,000 people, and offered services to 31 countries.

HSBC increased its investment in IT, straight-through processing as well as branch and ATM networks' expansion, as an effort to meet customers needs, improve processing time and reduce human errors. In 2007, HSBC refurbished 52 branches. In the same year HSBC launched SmartForms, which allowed customers to fill in account opening forms electronically in 16 countries and improved customer experience.

To improve risk management, HSBC developed a centralized database including all direct leading exposures to improve management reporting in 2007. HSBC operated a group wide electronic credit application process and a similar corporate credit application system. In 2008 HSBC replaced the IT platform in France with HSBC's universal banking platform and invested in the distribution platform in mainland China, India, Middle East and Latin America.

Strategic Investments

Facing the Y2K problem, HSBC adopted the conformity requirements issued by the British Standards Institution. In 1998, it completed the testing of all of its computer systems, evaluation of non-IT systems and formulation of group wide business contingency plans. As a result, the company experienced a smooth millennium transition, with no problems happening in any of the 76 countries and territories in which it operated. Minor problems in the United Kingdom with some externally supplied software were fixed quickly.

In July 1998 HSBC opened a new dealing room employing the latest technologies to cope with increased business volumes and to facilitate co-ordination between HSBC Markets, HSBC Securities and HSBC Futures. Later, it initiated several e-commerce projects to achieve its "Manage for Value" strategy in terms of customer services. Working with Compaq Computer, the company launched an Internet payment gateway to allow merchants to authorize and accept credit card payments securely. It launched mobile banking in September 1999 to allow customers to do daily banking and share dealing by mobile phone. Later that year, together with Cable and Wireless HKT, the bank provided an online service to enable merchants to set up online storefronts.

In October 1999 Heng Seng Bank, an HSBC subsidiary, launched Asia's first Mondex card in the form of an electronic wallet storing the money value on a chip, developed through a joint venture between HSBC and MasterCard International. Around the same time, Heng Seng Bank and Hewlett-Packard launched the Secure NetPayment Solution as an online payment gateway for credit card merchants.

In the late 1990s, HSBC cooperated with IBM to develop the Interactive Financial Services (IFS) system, integrating its existing capability with the full spectrum of its customers' technologies including the Internet, mobile phones and other wireless modes of data transmission. It also launched the United Kingdom's first nationally available TV banking service via Sky digital satellite, attracting over 126,000 registered customers by the end of 2000.

HSBC recognized the importance of the Internet and made some strategic investments, including the creation of a joint venture, iBusinessCorporation.com, with Heng Seng Bank as well as Cheung Kong Limited and Hutchison Whampoa Limited, two of Hong Kong's largest conglomerates.

In 2000 the company started to develop hsbc.com as a brand name and portal for providing customer services to both retail customers and small to medium sized enterprises. By the end of the year, its businesses operated online in Brazil, Canada, Hong Kong, the United Kingdom, Singapore and the United States.

Merrill Lynch HSBC, a joint venture between HSBC and Merrill Lynch, launched an online brokering and banking service for affluent customers in Canada and Australia. Meanwhile, in France and Brazil, HSBC launched mobile phone banking using wireless application protocol technology.

In 2000, the company spent over US\$2 billion on technology including dotcom initiatives. In 2001 it launched a new generation hsbc.com centre, providing a number of new major customer services. By the end of that year, the number of e-banking customers had more than doubled to over three million. HSBC websites were visited by customers in over 150 countries and territories in 2001, with an annual total of 76,650,000 site visits.

A major e-initiative in 2001 was the announcement of a strategic agreement between HSBC and Yahoo!, Inc. to deliver "Yahoo! PayDirect from HSBC", a cobranded person to person payment system allowing customers with an email address and a bank account (or credit card) to securely transfer money to another party. They established an operation centre in Buffalo, New York and successfully launched the system in late 2001. Further investment in customer relationship management (CRM) capacity enabled HSBC to provide additional intelligent services to customers.

In 2001, HSBC's second generation strategic Internet banking platform, hsbc.com, launched its first business applications. The hsbc.com program was designed to provide a common presentation and browser capability to offer all of HSBC's services to any of its customers. It was planned to integrate all the key systems with hsbc.com within five years. HSBC spent US\$164 million on development costs for hsbc.com in 2001 alone.

HSBCnet, the group's new e-banking platform for corporate and mid-market customers in Asia-Pacific, Europe, North America and the Middle East, was launched in 2004 to provide a range of transaction banking and treasury services. In commercial banking, the number of customers registered for Internet banking increased by 43 percent. The continued mitigation of processing activities from other regions to the group service centers entailed additional staff and IT infrastructure costs. The increase in IT costs in 2004 also reflected development of HSBC Finance Corporation's WHIRL credit card system for application in the UK and installation of HSBC's universal banking system, HUB, in France.

In 2005 the US Technology Center incurred US\$1.1 billion in expenses, 18 percent higher than the previous year due to the increased activity supporting both increased global IT requirements and the development of new capabilities in corporate, investment banking and markets. Customers responded favorably to the enhanced online banking service, with a 24 percent increase in customer numbers and a 116 percent increase in online transaction volumes. In the same year, the company launched its direct banking and savings scheme, HSBC Direct, in the U.S., reaching 343,000 customers with a total of US\$7.2 billion in deposits. The company also implemented a 2G website with a plan to integrate 80 percent of its websites by the end of 2007. 2G Innovative Business Solutions offered real time sales campaign capabilities with user related images, allowing the site to recognize customers and provide relevant personalized content and prefilled applications. HSBC Internet sales were up 25 percent in 2006, with over 250,000 new online savings accounts, raising US\$ 5.7 billion.

In 2006 HSBC introduced 2,300 advanced self service terminals, adding 13 countries to HSBCnet, its strategic Internet platform for corporate and institutional sales. HSBC Mexico became the first bank to offer preapproved online mortgages.

In Personal Finance Services, HSBC continuously updated its websites to offer additional features, personalized content and improved customer accessibility. The new technologies gave the company enhanced targeting and analytical insights to better meet customer needs and drive sales growth, leading to a 40 percent increase in personal customer numbers to 16 million and a 55 percent annual increase in online sales volumes.

In 2006, HSBC launched the five year One HSBC project, with the aim to develop a single One HSBC platform to replace 55 existing banking systems, 24 credit card systems, 42 Internet banking systems and 40 desktop standards [Flinders 2008a]. HSBC planned to gradually increase its investment in the project from the relatively stable IT annual budget of US\$6 billion, from US\$650,000 in 2007, US\$1 billion in 2008 to US\$1.2 billion in 2009. HSBC reduced its 55 core banking systems, 24 credit card systems and 41 Internet banking systems in 2003 down to 17, 17 and 13 respectively in 2008. In 2010, HSBC aimed to replace the existing systems with One HSBC Banking, One HSBC Cards and One HSBC Internet. The project seemed to begin to pay off within two years of its initiation.

It is now paying dividends in excess of its costs... The project is aimed at improving customer experiences and it happens to have a significant cost advantage as well...We can move into a new market relatively easy (as the platform reduces the costs of building complex banking IT infrastructures from scratch)...The costs of transactions can be measured in pennies (by linking disparate systems and automating services).

- Ken Harvey, group CIO for HSBC [Flinders 2008a]

IV. CITIGROUP

First National Bank of the City of New York and National City Bank of New York, the predecessors of the Citigroup, were both founded in the 19th century. They merged in 1955 to become First National City Bank to maintain dominance in the New York City market. The name Citibank was adopted in 1975. Another important merger happened in 1998 when Citicorp (the parent of Citibank) merged with Travelers Group. Travelers Group was also

the result of a series of mergers and acquisitions by Travelers, a diversified financial service provider based in Hartford, Connecticut. The motivation for this merger was cross selling within the context of a life cycle model. Travelers wanted access to Citibank's global consumer base, while Citibank wanted additional financial products that Travelers could offer [Rapp 2002].

Citigroup and its predecessor companies followed the "diversified financial services business" model first conceived by Prudential in the late 1970s [Wikipedia 2007]. It was believed that different types of companies, such as stock brokers, banks and insurance companies, should be conglomerated because each of these businesses would do better or worse at different times of the business cycle; hence, owning all of them could balance things out and create, in theory, less earnings volatility. Additionally, because customers usually used different kinds of financial products, it was more cost effective to cross sell these products at one time than to sell them separately.

Citigroup was divided into three major business groups:

- *The Global Consumer Group* focused on three business areas: cards, consumer finance and retail banking. Citigroup was the largest provider of credit cards in the world, the Consumer Finance Division (called CitiFinancial) was the largest consumer finance company in the world, while Citibank was striving to be one of largest retail banks.
- *The Global Wealth Management* division, consisting of the Citigroup Private Bank, Smith Barney, and Citigroup Investment Research, provided banking and investment services to high net worth individuals and private institutions. The corporate and investment banking division, which included Global Markets, Global Banking and Global Transaction Services, handled large corporate cash management, trade, lending, and investment banking services.
- *Citigroup Alternative Investments* offered a broad range of alternative investments, including hedge funds, private equity, credit structures, real estate, and other special investment opportunities.

Citigroup identified four competitive advantages over any other financial services company: global presence and reach, valuable brand name, scale and efficiency, and the wide range of products offered. In Citigroup's 2006 Annual Report, the company also identified five strategic priorities for 2006 and beyond:

- *Expanding distribution:* To penetrate new markets and deepen presence in existing markets around the world, Citigroup would accelerate the pace of branch openings, expand its capital markets businesses (including brokerage businesses and electronic trading capabilities), and increase the number of customers in the US.
- *Transferring expertise:* To manage Citigroup as one company, better integration of products and services was needed to improve customer service by providing insightful and comprehensive solutions.
- *Investing in people and technology:* Better system integration across the company was needed in order to allow clients' access and service, regardless of the type or location of their business. The company also needed to attract and develop the best talent by emphasizing long term training and career development, and continue being one of the most favored companies to work for.
- *Allocating capital to maximize returns:* Citigroup would continue to rigorously evaluate the use of capital in order to move it to higher return and growth opportunities.
- *Embracing shared responsibilities:* Citigroup would further build on its three shared responsibilities – those of its customers, employees and franchise - as the essential foundation for the growth of its franchise.

Citigroup was one of the banks which suffered most in the financial turmoil, with a record US\$9.8 billion loss for the fourth quarter of 2007. For the 2008 financial year, the group ended with a loss of US\$27.684 million. Vikram Pandit took on the CEO position of Citi in November 2007. In May 2008 Citi announced a three stage plan to revive the company: Get Fit, Restructure Citi, and Maximize Citi.

Under the "Get Fit" stage, Citi aimed to enhance its capital and structural liquidity, cutting expenses and decreasing risks across the group. To improve risk management Citigroup focused on three dimensions, namely businesses, regions and critical products. In 2007, Citi named a new Chief Risk Officer (CRO). Working closely with the CEO, the CRO was responsible for developing risk measurement standards, managing risks on a company wide basis, reporting risks to senior management, and ensuring independent operations of the risk function [Citigroup 2008].

During the “Restructure Citi” stage, in 2008 Citi had restructured into five business segments, Global Cards, Consumer Banking, Institutional Clients Group, Global Wealth Management and Other Corporate activities [see Appendix IV]. In order to focus on its core businesses, Citi realigned its businesses into Citicorp and Citi Holdings in January 2009. Citicorp included the Global Institutional Bank which provided services to corporate, institutional, public sector and private banking customers and the Citigroup’s regional consumer banks. Focusing on risk management and credit quality, Citi Holdings had brokerage and asset management, local consumer finance and a special asset pool [Citigroup 2008].

Throughout the “Maximize Citi” stage, as a way to reduce costs and position for future growth, Citigroup executed the 2007 Structural Expense Review and Restructuring, and the 2008 Re-engineering Projects and Restructuring Initiatives. As stated in its 2008 annual report, the primary goals were as follows:

- Reduce management layers and enhance workforce management
- Consolidate back office, middle office and corporate functions
- Use shared services more often
- Encourage centralized procurement
- Rationalize operational spending on IT

IT Investment Strategy

One of our goals is to have more common systems and standards across Citigroup so clients can transact with us more easily, no matter what business is serving them or where they’re conducting business.

- Chuck Prince, CEO of Citigroup [Citigroup 2005]

Key to deepening our client relationships will be the benefits of emerging technology. As we response quicker, communicate more effectively, simplify transactions, and innovate faster, we will be able to drive superior service to our clients across the globe. The more we harness emerging technologies, the easier it will be for our clients to work with us. As our clients increasingly incorporate technology into their financial routines, Citi will be positioned to capitalize on this by building on our deep history of technological innovation.

- Vikram Pandit, CEO of Citigroup [Citigroup 2008]

Unlike HSBC, Citigroup took an integrated approach to their IT governance worldwide. Citigroup used a combination of packaged and customized software to develop group wide platforms to enhance the organizational strengths of its extensive international branch network and to facilitate knowledge exchange across borders. While taking a global approach, Citigroup also made an effort to understand local conditions. The only truly global requirements were that a local system was capable of being efficiently linked with Citigroup’s existing systems and that adequate security arrangements could be made.

Operations and Technology provided global support to Citi’s business, and it had two key technology groups [see Appendix IV]:

- *Corporate and Investment Banking Technology* was responsible for analyzing business requirements, providing support and solutions to businesses, developing and managing applications, and ensuring application availability and timely problem resolution to cope with the dynamic investment banking technology environment.
- *Citi Technology Infrastructure (CTI)* was responsible for managing all forms of internal infrastructure products including PCs, telephony, servers, messaging, system security, structured cabling, remote access, and network services and mainframe-based application processing. Within CTI was a group based in Los Angeles to assist in operations in each country in terms of meeting local standards and ensuring consistency with Citi’s system. In each country, Citi built a systems network managed by a regional computer centre.

The initiation of IT projects often began with a local business unit. Since the business unit was charged the costs of system development, a manager would not undertake or approach an IT project unless bottom line benefits could be anticipated. All outside vendors were required to comply with Citi’s rules and protocols with respect to connecting to its system.

The shrinking profits and tightening budget during the economic downturn had forced Citigroup to reassess the risks of its IT investment strategies.

(W)e also inherited many high risk assets that were not essential to our core business. We found that some of Citi's resources were allocated to activities that did not create enough value for our clients and did not earn adequate risk-adjusted returns for shareholders. At the same time, we uncovered an outsized cost structure and inefficient information technology systems that in many cases could not connect to one another... We recognized operations and technology and other functions to create a more streamlined organization with greater accountability for performance.

- Vikram Pandit, CEO of Citigroup [Citigroup 2008]

Unlike HSBC, Citi decided to cut back on IT spending in turbulent times. In May 2008, after a loss of US\$5.1 billion was reported in the first quarter of 2008, Citi's CEO Vikram Pandit announced a 20 percent cut on IT spending and a plan of realigning its IT operations as a way of cost saving. In the words of Vikram Pandit, "it is clearly feasible for us to take 10, 15, 20 percent off our cost base, especially in information technology and operations." [King 2008]

Operational Investments

Citigroup used a combination of packaged and customized software to enhance the organizational strengths of its extensive international branch network and to capture the expert knowledge that was scattered across its operations in many different countries [Rapp 2002]. The company pursued IT outsourcing only in a very limited way and not for strategic initiatives. One such example was the US\$750 million project in the mid-1990s to fully integrate the bank's 60,000 PCs and 2,000 LANs worldwide into a common global network and systems infrastructure [Rapp 2002]. The company controlled the system architecture and the tools used, while Digital Equipment Corporation and EDS handled implementation.

In 1997 the group launched e-Citi as the business unit of the group to pioneer electronic financial services and e-commerce solutions for businesses, governments and consumers. Partnering with other Citigroup businesses, e-Citi was a centralized approach to e-commerce with the objective of creating innovative products and services with the assurance of trust, privacy and security inherent to the Citigroup brand. Between 1997 and 1999, over US\$1 billion was spent by Citigroup on e-Citi.

Citigroup also launched a program in 1997 to integrate Citibank systems into a standard global platform, while at the same time coping with the demands from the mergers, the introduction of the new euro currency, and reprogramming required for the Y2K problem. In 1998, capitalizing on Salomon Smith Barney's ongoing commitment to be a technology leader among full service brokerage firms, the group expanded its capabilities to provide clients with around-the-clock account information, research, and email exchange with their financial consultants. Additionally, it began to develop an Internet based administrative platform to support development in pension and mutual fund areas to make it easier for clients to do business with the company.

In 1998, the group launched e-Citi Commerce Solutions, offering electronic bill payment presentation, authentication, and certification to big companies and government organizations. In 1998, it was the only bank offering around-the-clock telephone access in many countries, while its PC banking product was the highest rated by SmartMoney magazine.

Citigroup's strategy was to use technology to provide customers with superior service at lower costs [Citigroup 2006]. In 2006 it made strategic investment in an electronic communications network that provided state of the art technology for immediate access to liquidity. It also reduced the number of its data centers by 20 percent and consolidated its call centers for greater efficiency.

In 2005 Citi Technology Services, Ltd. was established in Mumbai and Chennai, India. It provided IT infrastructure support and software development to Citi and its affiliates. On December 23 2008, Citigroup decided to sell its interest in Citi Technology Services, Ltd. to Wipro Limited for US\$127 million. Meanwhile, Citigroup and Wipro entered into a service agreement from which the proceedings would be used to pay for the IT services provided by Wipro. As a result, Citigroup incurred a loss of US\$7 million [Citigroup 2008].

Strategic Investments

In an alliance with Netscape, Citigroup provided financial advice, news, research reports and interactive investment tools to its customers in the late 1990s, around the same time that it started offering online banking, insurance and mortgage services. It later made other strategic alliances with AOL and Oracle. The company also introduced a

business to business e-commerce system called Citibank Commerce, which was initially available in the Asia-Pacific region. This was an Internet corporate banking service that allowed clients to order products, monitor order status and complete settlement and reconciliation processes. It also started a trial service with Mobile One in Singapore, allowing clients to open accounts and transfer money using mobile phones.

In 2000 the company accelerated its global growth in its credit card business through 10 strategic acquisitions, reaching 100 million accounts. The technology platforms on which these accounts were managed provided a best in industry cost position and efficiently leveraged the company's global expansion. The power of its technology platforms was further demonstrated by the rapid integration of the CitiFinancial system with the 750 former associates' branches in the U.S. in the same year.

In 2000, with more than 800 million accounts online, Citigroup adopted a strategy called "Citi on the Net" as an effort to deliver convenience and value to its clients and improve efficiency. New Internet units, including e-Commerce, e-Business and e-Capital Markets, were created to empower the business lines, while the Internet Operating Group was created to drive corporate Internet strategy and coordinate efforts across different divisions. Citi.com was created for consumers as a portal offering an integrated set of consumer services in the areas of banking, brokerage and insurance. With the introduction of MyCiti.com, the company became the first global financial institution to offer account aggregation.² In 2001, it formed a strategic alliance with the Microsoft Network and AOL to develop different online products. The business unit responsible for developing and implementing Global Consumer Internet financial service products and e-commerce solutions reported a loss of US\$110 million in 1999, US\$160 million in 2000 and US\$77 million in 2001.

In 2002 Citigroup launched new foreign exchange products and enhanced Citigroup Direct, the flagship online service for fixed income institutional customers. The same year, Global Transaction Services was created to integrate Cash, Trade and Treasury Services and Global Securities Services. The group also upgraded CitiDirect Online Banking, making it available in 90 countries. CitiDirect, processing more than 39 million transactions around the world in 2004, was named "Best of the Web" for 2003 by Forbes.com in the financial services category.

In 2004 Citigroup acquired Lava Trading, the leader in electronic execution and sell-side order management systems, enabling the group to offer institutional clients the most sophisticated and robust electronic system on the market. By leveraging the technology from its acquisitions, the company expanded its US electronic trading capabilities and tripled its client number in 2005. By developing a joint venture with Shanghai Pudong Development Bank in 2004, Citigroup was able to use its U.S. cards technology to issue the first dual currency card in China in 2005. As international expansion was one of the strategic goals of the company, it continued making targeted acquisitions. In 2006 it acquired Egg Banking Plc, the world's largest pure online bank and one of the UK's leading online financial services providers.

In 2006 Citigroup launched Citibank Direct, which successfully brought in nearly US\$10 billion in deposits in the U.S. in the first nine months. Citibank Direct aimed to expand its U.S. and global retail banking customer base by offering high yield e-savings accounts, with the ultimate objective of offering all Citibank products at more attractive Internet rates. It also launched biometric credit card services in Singapore and biometric ATMs for microfinance customers in India, allowing customers to do business with the touch of a finger. The company became the first financial institution to implement enhanced authentication globally for sensitive transactions over the Internet and other online channels.

In 2007 Citigroup acquired Automated Trading Desk (ATD), a market leader in the fast growing electronic market making and proprietary trading, for US\$680 million. ATD handled around 200 million transactions per day for large institutional investors as well as its own trading account, accounting for 6 percent of the total transactions on New York and Nasdaq stock exchanges [Stock 2007].

V. CONCLUSION

Over the past ten years, HSBC and Citigroup have developed into influential global financial institutions. Both banks have committed to using IT to gain competitive advantages, and both have invested significantly in their IT projects. However, the IT projects that HSBC and Citigroup have invested in have been different, which may reflect their different approaches to IT investment. How does HSBC's IT strategy differ from that of Citigroup's? Which of these two banks is more clever in its IT investment strategy? How do you measure the return of their IT investments?

² Account aggregation is a method of compiling information from different accounts which may include bank accounts, credit card accounts and investment accounts.

Moreover, banks were under pressure to cut spending during the economic downturn. Banks were facing shrinking profits and even bigger losses as a result of deflated assets and a large (and still increasing) amount of bad debts being written down. Before the financial crisis, the global after-tax profits for banks had reached an unsustainable level of US\$788 billion in 2006, rising from US\$372 billion in 2000. Meanwhile, the increasing spending on risk management and the lower expected return on equity also meant banks had to improve their cost efficiency. So should banks cut back on their IT spending, like Citigroup? However, if banks abandoned sound IT projects and ended the contracts early, it could damage long term relationships with contractors. So should banks believe IT could help cut costs and consolidate their strategic positions and continue to invest in IT, like HSBC?

REFERENCES

Editor's Note: The following reference list contains hyperlinks to World Wide Web pages. Readers who have the ability to access the Web directly from their word processor or are reading the paper on the Web can gain direct access to these linked references. Readers are warned, however, that:

1. These links existed as of the date of publication but are not guaranteed to be working thereafter.
2. The contents of Web pages may change over time. Where version information is provided in the References, different versions may not contain the information or the conclusions referenced.
3. The author(s) of the Web pages, not AIS, is (are) responsible for the accuracy of their content.
4. The author(s) of this article, not AIS, is (are) responsible for the accuracy of the URL and version information.

Banks, J. (2006). "Only Connect," *IT Leadership*, <http://www.the-itleader.com/features/feature437/> (May 1, 2006).

Carr, N. G. (2003). "IT Doesn't Matter," *HBR AT Large* (May), pp. 41-49.

Citigroup (1997-2008). *Citigroup Annual Report*.

Deloitte (2005). *Global Financial Services Offshoring: Scaling the Heights* London: Deloitte Touche Tohmatsu.

Deloitte (2007). *Global Banking Industry Outlook: Issues on the Horizon 2007* Washington: Deloitte Touche Tohmatsu.

Deloitte (2009). *Global Banking Industry Outlook: Challenging Times, Emerging Opportunities* Washington: Deloitte Touche Tohmatsu.

Dietz, M., R. Reibestein, and C. Walter (2008). "What is in Store for Global Banking," *McKinsey Quarterly* (January).

Eckenrode, J. (2007). "2007 Bank Technology Forecast: Challenges and Opportunities," *Bank Systems and Technology* (February 1).

Flinders, K. (2008a). "HSBC One Platform Strategy Pays for Itself," *ComputerWeekly.com* <http://www.computerweekly.com/Articles/2008/10/29/232952/hsbc-one-platform-strategy-pays-for-itself.htm> (October 29).

Flinders, K. (2008b). "IT Project Cuts During Downturn a Bad Idea," *ComputerWeekly.com* <http://www.computerweekly.com/Articles/2008/10/30/232979/it-project-cuts-during-downturn-a-bad-idea.htm> (October 30).

HSBC (2006a). "HSBC Holdings Plc: Presentation to Financial Stability Institute," OECD <http://www.oecd.org/dataoecd/50/0/37178532.pdf> (June 19 2006).

HSBC (2007). "Corporate Strategy," HSBC http://www.hsbc.com/hsbc/investor_centre/strategy (current March 30 2007).

HSBC (1997-2008). *HSBC Annual Report*.

Kauffman, R. J. and B. W. Weber (2002). "Introduction to the Special Issue on Advances in Research on Information Technologies in the Financial Services Industry," *Journal of Organizational Computing and Electronic Commerce* 12(1) 2002, pp. 1-4.

King, Leo (2008). "Citi Hacks IT costs to Revive Balance Sheet," *ComputerworldUK* <http://www.computerworlduk.com/management/it-business/it-organisation/news/index.cfm?newsid=8633> (April 18 2008).

Moskalyuk, A. (2007). "Banking Industry IT Spending to Reach \$241.2 bln in 2007," DZNet Research <http://blogs.zdnet.com/ITFacts/?p=12508> (March 5 2007).

Quittner, J. (2006). "Beyond IT: Outsourcers Expand Services," *American Banker* 171(216) pp. 26-28.

Rapp, W. V. (2002). *Information Technology Strategies: How Leading Firms Use IT to Gain an Advantage*, Oxford: Oxford University Press.

Solow, R. M. (1987). "We'd Better Watch Out," *New York Times* (July 12) p.36.

Stock, K. (2007). "Best Trade Yet for ATD: Citigroup to Pay \$680M for Company Based in East Cooper," http://www.charleston.net/news/2007/jul/03/best_trade_yet_atdcitigroup_pay_m_company_based/ (July 3 2007).

Vashistha, A. (2007). "What is the Weakest Link in Global Outsourcing?," *InformationWeek's Optimizer* 66.

Wikipedia (2007). "Citigroup," http://en.wikipedia.org/wiki/Citigroup#Business_model (current March 30 2007).

APPENDIX I GLOBAL BANKING IT SPENDING

IT Spending in Banking		
Item	Year	IT Spending
EUROPE (In US\$ bn)	2006	121.8
	2007	131.3
	2008	134.9
	2009*	130.3
	2010*	133.3
NORTH AMRECIA (In US\$ bn)	2006	111.1
	2007	115.9
	2008	119.9
	2009*	116.7
	2010*	119.7
ASIA PACIFIC (In US\$ bn)	2006	71.1
	2007	76.6
	2008	83.3
	2009*	85.8
	2010*	90.3
REST OF THE WORLD (In US\$ bn)	2006	18.0
	2007	19.0
	2008	19.9
	2009*	20.5
	2010*	21.2
TOTAL (in US\$ bn)	2006	322.0
	2007	343.8
	2008	354.0
	2009*	353.3
	2010*	354.5

* denotes the estimated figures

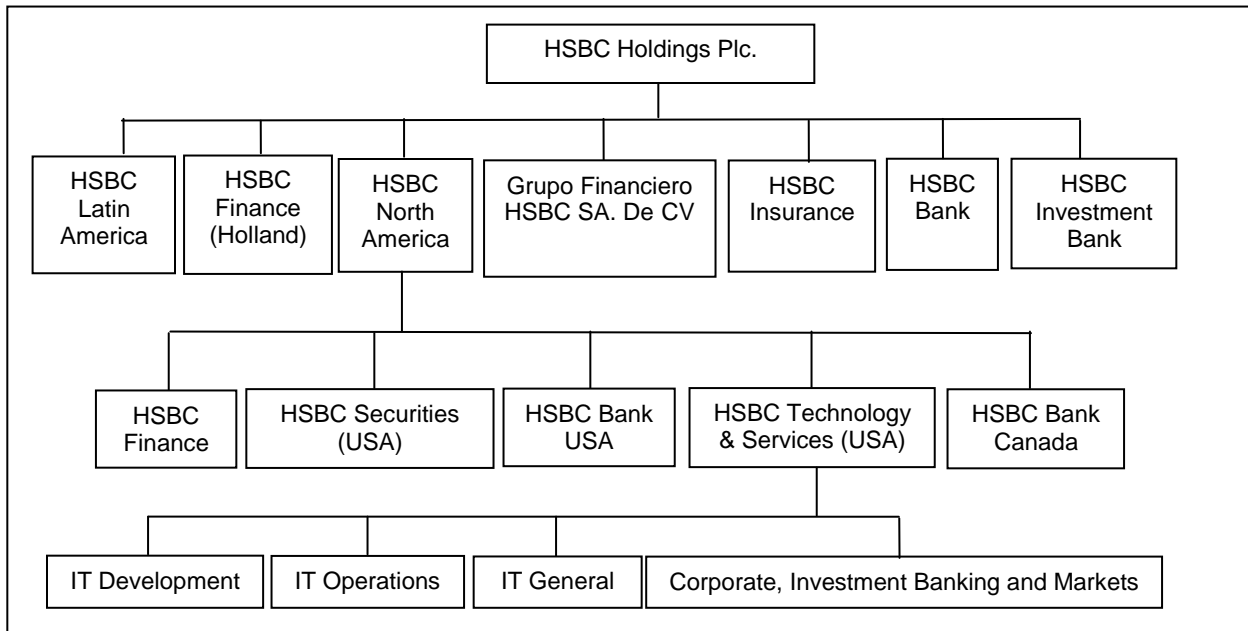
Sources: Celent (2009) *IT Spending in Financial Services: A Global Perspective*.

APPENDIX II COMPARABLE STATISTICS – HSBC VERSUS CITIGROUP

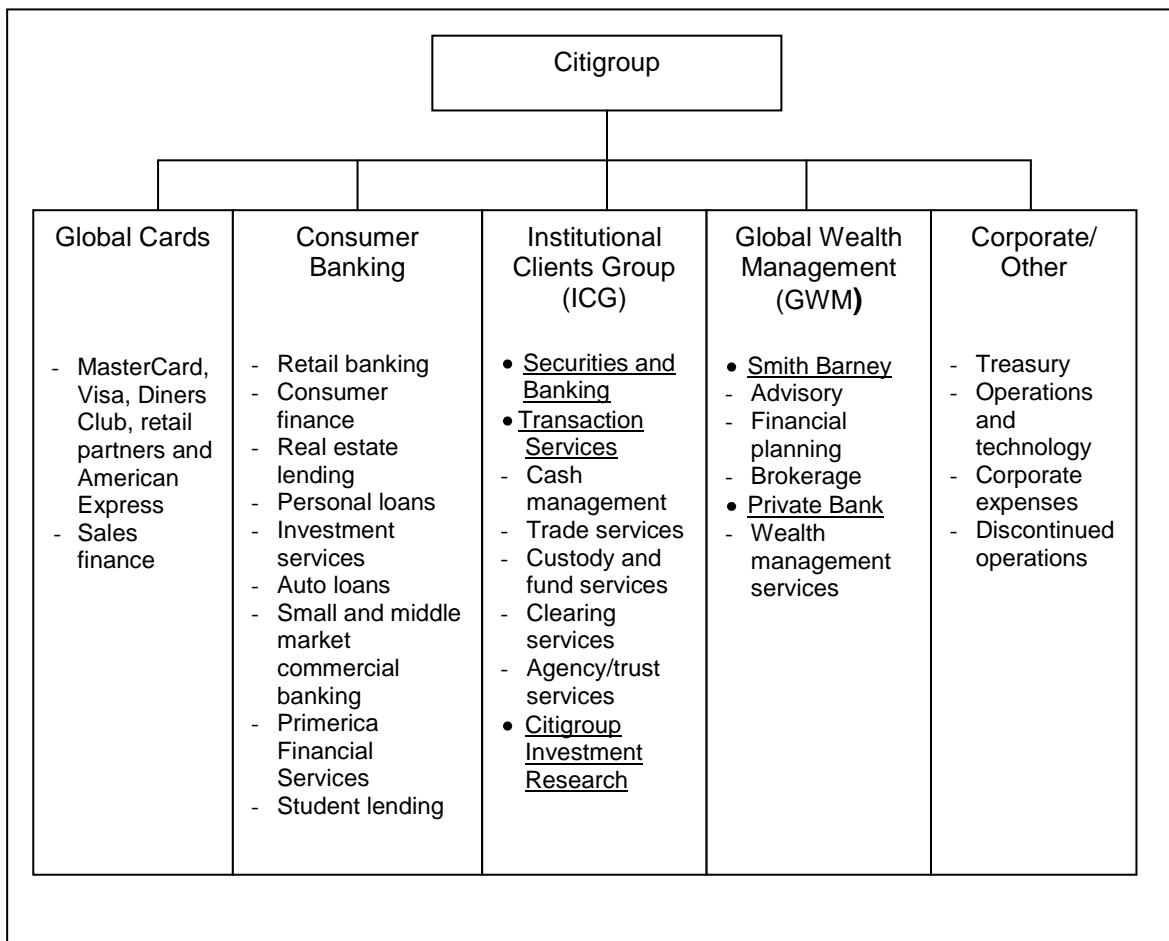
Comparable Statistics – HSBC Versus Citigroup			
Item	Year	HSBC	Citigroup
MARKET CAPITALIZATION (In US\$ bn)	1999	118	40.3
	2000	136	64.4
	2001	109	79.7
	2002	105	180.9
	2003	172	250.3
	2004	190	20.3
	2005	182	241.7
	2006	212	269.1
	2007	198	160.45
	2008	114	36.57
TOTAL ASSETS (In US\$ m)	1999	569,139	795,584
	2000	680,076	902,201
	2001	698,312	1,051,450
	2002	763,565	1,300,000
	2003	1,012,023	1,264,032
	2004	1,266,365	1,484,101
	2005	1,406,944	1,494,037
	2006	1,712,627	1,884,318
	2007	2,354,266	2,187,480
	2008	2,527,465	1,938,470
NET PROFIT (In US\$ m)	1999	4,889	9,994
	2000	6,236	13,519
	2001	4,911	14,284
	2002	4,900	12,682
	2003	7,231	17,058
	2004	12,506	16,054
	2005	14,703	19,805
	2006	16,358	21,538
	2007	19,133	3,617
	2008	5,728	(27,684)
NUMBER OF EMPLOYEES	1999	154,000	180,000
	2000	172,000	230,000
	2001	180,000	268,000
	2002	192,000	250,000
	2003	232,000	275,000
	2004	253,000	290,332
	2005	284,000	299,938
	2006	312,000	325,000
	2007	330,000	374,000
	2008	325,000	322,800
IT EXPENDITURE (in US\$ m)	1999	1,750	3,780
	2000	2,050	3,767
	2001	2,450	3,068
	2002	2,500	3,139
	2003	2,600	3,414
	2004	2,700	3,518
	2005	4,413	3,524
	2006	4,810	3,762
	2007	5,000	4,511
	2008	6,000	4,897

Sources: HSBC Annual Report 1999-2008, Citigroup Annual Report and Annual Diversity Report 1999-2008, HSBC website (company presentations) and Citigroup's Form10-K available on the US government official website

APPENDIX III SIMPLIFIED ORGANIZATION CHART FOR HSBC HOLDINGS PLC



APPENDIX IV SIMPLIFIED ORGANIZATION CHART FOR CITIGROUP IN DECEMBER 2008



Source: Citigroup 2008 Annual Report



ABOUT THE AUTHORS

Ali Farhoomand is professor of innovation and information management, founding director of Asia Case Research Center, and coordinator of business design and innovation programme at the University of Hong Kong. He has taught and conducted research in universities across the world, including INSEAD and MIT Sloan School of Management.

Minyi Huang is research associate in the Asia Case Research Centre, School of Business of the University of Hong Kong. With a Ph.D. in information systems from the London School of Economics, her research interests include IT investment evaluation, IT implementation, and innovation studies.

Copyright © 2009 by the Association for Information Systems. Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and full citation on the first page. Copyright for components of this work owned by others than the Association for Information Systems must be honored. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers, or to redistribute to lists requires prior specific permission and/or fee. Request permission to publish from: AIS Administrative Office, P.O. Box 2712 Atlanta, GA, 30301-2712, Attn: Reprints; or via e-mail from ais@aisnet.org.



EDITOR-IN-CHIEF
 Ilze Zigurs
 University of Nebraska at Omaha

AIS SENIOR EDITORIAL BOARD

Guy Fitzgerald Vice President Publications Brunel University	Ilze Zigurs Editor, CAIS University of Nebraska at Omaha	Kalle Lyytinen Editor, JAIS Case Western Reserve University
Edward A. Stohr Editor-at-Large Stevens Institute of Technology	Blake Ives Editor, Electronic Publications University of Houston	Paul Gray Founding Editor, CAIS Claremont Graduate University

CAIS ADVISORY BOARD

Gordon Davis University of Minnesota	Ken Kraemer University of California at Irvine	M. Lynne Markus Bentley College	Richard Mason Southern Methodist University
Jay Nunamaker University of Arizona	Henk Sol University of Groningen	Ralph Sprague University of Hawaii	Hugh J. Watson University of Georgia

CAIS SENIOR EDITORS

Steve Alter University of San Francisco	Jane Fedorowicz Bentley College	Jerry Luftman Stevens Institute of Technology
--	------------------------------------	--

CAIS EDITORIAL BOARD

Michel Avital University of Amsterdam	Dinesh Batra Florida International University	Indranil Bose University of Hong Kong	Ashley Bush Florida State University
Fred Davis University of Arkansas, Fayetteville	Evan Duggan University of the West Indies	Ali Farhoomand University of Hong Kong	Sy Goodman Georgia Institute of Technology
Mary Granger George Washington University	Ake Gronlund University of Umea	Douglas Havelka Miami University	K.D. Joshi Washington State University
Chuck Kacmar University of Alabama	Michel Kalika University of Paris Dauphine	Julie Kendall Rutgers University	Claudia Loebbecke University of Cologne
Paul Benjamin Lowry Brigham Young University	Sal March Vanderbilt University	Don McCubbrey University of Denver	Fred Niederman St. Louis University
Shan Ling Pan National University of Singapore	Jackie Rees Purdue University	Jia-Lang Seng National Chengchi University	Paul Tallon Loyola College, Maryland
Thompson Teo National University of Singapore	Craig Tyran Western Washington University	Chelley Vician Michigan Technological University	Rolf Wigand University of Arkansas, Little Rock
Vance Wilson University of Toledo	Peter Wolcott University of Nebraska at Omaha	Yajiong Xue East Carolina University	

DEPARTMENTS

Global Diffusion of the Internet Editors: Peter Wolcott and Sy Goodman	Information Technology and Systems Editors: Sal March and Dinesh Batra
Papers in French Editor: Michel Kalika	Information Systems and Healthcare Editor: Vance Wilson

ADMINISTRATIVE PERSONNEL

James P. Tinsley AIS Executive Director	Vipin Arora CAIS Managing Editor University of Nebraska at Omaha	Copyediting by Carlisle Publishing Services
--	--	---

