IFC Mobile Money Study 2011

BRAZIL

In Partnership with the Republic of Korea

IFC International Finance Corporation
World Bank Group

IFC ADVISORY SERVICES | ACCESS TO FINANCE

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Foreword

Financial inclusion—access to a range of financial services and products for everyone needing them, in a fair, transparent, and cost-effective manner—is a goal of IFC (International Finance Corporation) and a priority of the Group of 20 development agenda.

IFC has committed to achieving greater financial inclusion by 2013 by providing more diversified financial services and by deepening outreach to microclients and small and medium enterprises. IFC also helped support and shape the G20 global financial inclusion agenda that calls for the promotion of a range of financial services beyond credit—including payments, savings, remittances, and insurance.

More than 2.7 billion people in developing countries do not have access to basic formal financial services, such as savings and checking accounts. Many governments have made savings accounts widely available, but to make payments and transfer funds, the poor must often depend on costly and unreliable informal financial services. Low levels of financial inclusion also represent an obstacle to economic development.

Developing innovative methods of retail payments is essential to increasing financial inclusion. New technologies and new business models are opening new methods of retail payments, as well as bill payments and transfers of funds among people and businesses.

Mobile technology is a channel that, once in place, allows for the delivery of other low-cost financial services bringing banking to unbanked and underserved people. Mobile money—the transfer of funds using cell phones—is an innovative method for both individuals and small businesses to transfer money. Mobile money is becoming common in developed countries for small, frequent payments such as mass transit fees. In some developing countries, it offers an opportunity for unbanked people to pay bills and transfer funds without using cash. Some businesses use it throughout their supply chain.

Why has the development of mobile money systems been so successful in some countries, yet seem blocked in others? What can be done to encourage its development globally?

This report looks at the technology required and the business models used by mobile network operators, banks, and others in four developing countries—Brazil, Nigeria, Sri Lanka, and Thailand. It compares these countries with Kenya and Japan, which have successfully developed mobile money operations, and with the United States.

Perhaps more importantly, it offers a framework for a quick market study of a country to determine whether or what type of mobile money services might be developed commercially. It offers models of user perception and demand surveys, then develops a set of parameters—such as regulatory

environments, current access to financial services, and the requirements of potential mobile money service providers to run viable businesses—that can spur or block mobile money development. By using these survey techniques and examining the relevant parameters, a government or development agency can assess a country's potential for a successful mobile money business.

We hope this report will contribute to mobile money business development globally. It is intended for regulators, mobile network operators, commercial banks, microfinance institutions, telecommunications equipment and handset manufacturers, and others that could be involved in the development of mobile money businesses.

I would like to express sincere thanks to the government of the Republic of Korea for its support of this study through the Korean Trust Fund.

Peer Stein
Global Business Line Leader
IFC Advisory Services, Access to Finance

Acknowledgments

This study was commissioned to increase understanding of mobile money (m-money) and help address key issues in scaling up further development of m-money ecosystems globally.

First and foremost, we are grateful to the government of the Republic of Korea for its leadership in the area of information and communications technology for development, and for funding this study to promote the m-money agenda for the public benefit.

Intelecon Research and Consultancy Ltd of Vancouver was contracted by IFC (International Finance Corporation) to conduct the IFC Mobile Money Study 2011, including in-country fieldwork. Andrew Dymond, Steve Esselaar, and Sonja Oestmann authored the reports, assisted by the rest of the Intelecon team. The team also included Jenny Hoffmann from RiskFrontier Consulting (United Kingdom) and local research partners in each country: Antonio Bothelo of Diálogo Regional sobre la Sociedad de la Información (Brazil), Ike Moweto of Research ICT Africa! (Nigeria), Harsha de Silva of LIRNEasia (Sri Lanka), and Deunden Nikomborirak of Thailand Development Research Institute (Thailand).

We are also extremely grateful to our partnering m-money operators for their cooperation: Oi Paggo in Brazil (a new company, Paggo Soluçoes, has since been formed), eTranzact in Nigeria, Dialog in Sri Lanka, and TrueMoney in Thailand. Other organizations, companies, and individuals in each country gave generously of their time and knowledge, including the Central Bank of Brazil, the Central Bank of Nigeria, the Central Bank of Sri Lanka, and the Bank of Thailand. Appendix B of each country report lists the many people interviewed during the study; their participation is greatly appreciated.

The following IFC and World Bank colleagues in the respective countries provided local insights and liaison with the above-mentioned partnering institutions, and helped the team conduct meetings and field surveys: Alexandre Darze and Terence Gallagher (Brazil), Theophilus Adewale Onadeko (Nigeria), Asela Tikiri Bandara Dissanayake (Sri Lanka), and Frederico Gil Sander and Ratchada Anantavrasilpa (Thailand).

Several individuals within IFC, infoDev, the World Bank, and the Consultative Group to Assist the Poor helped create this report, providing services including Trust Fund administration, project management, project design, expert advice, peer review, administration of in-country surveys, coordination, printing, and public relations.

We are grateful for the insightful inputs and peer reviews by Hemant Baijal, Deepak Bhatia, Margarete Biallas, Massimo Cirasino, Andi Dervishi, Janine Firpo, Soren Heitmann, Eriko Ishikawa, Nikunj Jinsi, Samuel Kamau Nganga, Tim Kelly,

William Kerr-Smith, Yong Hyun Kwon, Samia Melhem, Harish Natarajan, John Irungu Ngahu, Mark Pickens, Christine Zhen-Wei Qiang, Wiebke Schloemer, Josef Skoldeberg, Hourn Thy, Michael Trucano, and Shinya Yoshino.

Mary Paden edited the text to make it very user-friendly. Nita Congress gave it a wonderful design.

The project could not have been completed without the administrative and managerial support of Greta Bull, Catherine H. Burtonboy, Valerie D'Costa, Philippe Dongier, Gilles Galludec, Matthew Gamser, Dianne Garama, Idawati Harsongko, Oleh Khalayim, Sujata Lamba, Henna Lee, Kent E. Lupberger, Trang Nguyen, Marcia Roa, Colin Shepherd, Peer Stein, Stephanie Von Friedeburg, and Ann-Marie Webster.

Arata Onoguchi, Leila Search, and Piya Baptista
IFC Mobile Money Study 2011 Project Team

Abbreviations

2G	second generation
3G	third generation
ATM	automated teller machine
B2B	business to business
BNDES	Brazilian National Development Bank
CGAP	Consultative Group to Assist the Poor
e-money	electronic money
e-payment	electronic payment
e-wallet	electronic wallet
FEBRABAN	Brazilian Federation of Bank Associations
FGV	Fundação Getulio Vargas
G2P	government to person
GDP	gross domestic product
GSM	global system for mobile communications
HHI	Herfindahl-Hirschman Index
IFC	International Finance Corporation
KYC	know-your-customer
m-banking	mobile banking
m-money	mobile money
m-payment	mobile payment
MFI	microfinance institution
MNO	mobile network operator
MSD	Ministry of Social Development
NFC	near-field communication
OSCIP	Organização da Sociedade Civil de Interesse Público
P2P	person to person
PIN	personal identification number
PMC	BNDES Microcredit Program
POS	point of sale
SCM	Sociedade de Crédito ao Microempreendedor
SIM	subscriber identity module
SMS	short message service
WAP	wireless application protocol

The average exchange rate for the year 2010 of 1.76 Brazilian real/1 U.S. dollar is used throughout.

Summary

Although some data suggest that Brazil has a large unbanked population,[1] and therefore potential opportunities for mobile money (m-money), our analysis asserts that the Brazilian population is better served through a variety of formal and informal means. Brazil does have a considerable demand and opportunity for credit and microcredit, especially among the low-income population.

However, a recent partnership may give m-money and mobile payments (m-payments) better prospects in Brazil. Tele Norte Leste, popularly known as Oi (Portuguese for "hello"), the country's largest telecommunications firm, has formed a partnership with a major bank, Banco do Brasil, and the credit card acquiring company Cielo, which owns approximately 50 percent of Brazil's credit card point-of-sale (POS) infrastructure and has relationships with merchants. Oi is now poised to capture a larger m-money market than it could previously with its subsidiary Oi Paggo, which offered credit through mobile phones.

Currently, the unbanked population in Brazil is served through the following:

- **Correspondent banks.** A large network of such banks (up to 150,000) allows for efficient bill payment by people without bank accounts.[2]
- **Consumer loans and credit.** Consumer loans and credits provided by retailers have grown more than 30 percent in the past year, especially among low-income groups. No bank account is required, and regulation allows the retailer to recover goods in the case of nonpayment.
- **Payroll-consigned loans.** Facilitated through regulation aimed at financial inclusion, these loans are widely popular and used throughout Brazil, with more than 50,000 companies participating.

The biggest demand from the population is for access to credit. In contrast, there is little demand for remittances, either domestic or international. Eighty-four percent of the population is urban, and inbound international remittances account only for 0.3 percent of gross domestic product (GDP).

[1] The Consultative Group to Assist the Poor estimates that 70 percent of the adult population still lacks access to bank accounts but admits there are no official sources to verify the number (CGAP 2010b). The Financial Access Initiative (FAI 2009) states that 43 percent of the adults in Brazil use formal or semiformal financial services (i.e., banks or microfinance institutions).

[2] Correspondent banks are retail agents such as lottery chains, supermarkets, or drug stores that deliver financial services outside traditional bank branches. An institution licensed by the Central Bank of Brazil may partner with any legal entity to deliver a regulated but wide array of financial services, including loan applications, credit and personal data analysis, loan collection, receipt of account opening applications, deposits/withdrawals, and bill payments.

Credit card and debit card penetration is high, with 1.65 debit cards per deposit account, and 1.10 credit cards per deposit account (with a growth of 117 percent from 2003 to 2008 for the latter). Credit and debit cards are supported by high automated teller machine (ATM) and POS device penetration in the country. In 2007, Brazil had 832 ATM terminals per million inhabitants, on par with Germany (831), France (821), Italy (817), and Switzerland (778), but behind the United Kingdom (1,040) and Japan (1,121).

Brazil has a massive conditional cash transfer scheme for the poor—Bolsa Familia. This program benefits 12.5 million families every month using a card-based system. Financial inclusion efforts by the government allow for a "simplified account"; more than 10 million such accounts exist, but only 5.5 million are active.

The banking sector is competitive and efficient. Because the country is served decently by both formal and informal means, opportunities for m-money are limited. The main value-added propositions m-money could potentially provide in such a market are as follows:

- The ability for existing bank customers to make transactions while on the move and to make *remote* purchases or payments; otherwise, the current use of payment cards is faster and more convenient until near-field communication (NFC) is universal
- A stored value account for unbanked customers, which would require (1) a wide cash-in/cash-out agent network (which only the banks have currently), and (2) a large payment acceptance network where people can pay with their m-money (which only the payment card providers currently have)
- Extensive (micro-) credit to unbanked customers, who cannot be reached by the banks or credit card companies, but might be reached through the relationship that a mobile network operator (MNO) has with its customers (this is similar to the service offered by Oi Paggo, a 100 percent subsidiary of the mobile operator Oi); however, this service would require that the mobile "credit card" be widely accepted by merchants, and that is not the case at this time.

Thus, there is no opportunity for any MNO to act alone; it needs to partner with banks and/or payment providers. If an MNO can bring new customers to the payment provider (e.g., through its POS terminals and network), it would be attractive for both parties.

Banks may have an interest in acquiring new customers with a mobile stored value account, but they ultimately would want to move customers to a bank account, as well as to control the brand and loyalty of the clients.

The credit market is the most promising area for m-money to develop services and applications in Brazil. Both high-end clients and lower-income unbanked clients are interested in credit, rather than savings, products (table S.1).

Brazil's banks seem challenged between serving the high-end banked clients with advanced technology—such as NFC for payments (e.g., Visa payWave) that provides convenience and speed—and addressing the lower-income clients and the unbanked population, who need tailored credit offerings and other financial services.

Oi Paggo, the leading m-money service provider, started as a credit card business, but later replaced the actual credit card with a mobile phone that could communicate with another mobile phone that acted as the POS device for merchants. The credit card business is attractive in Brazil because there is a strong, unmet demand for credit, especially among the middle class (called the "C-class") and because there are high credit spreads from 5–15 percent on monthly balances.

In developing its m-money business, Oi Paggo's main challenge was to reach economies of scale and to increase acceptance of Oi Paggo as a payment instrument. In 2010, Banco do Brasil and Cielo, Brazil's leading card acquirer, signed deals with Oi Paggo's parent company, Tele Norte Leste, (popularly known as Oi), the country's largest telecommunications firm. Banco do Brasil signed a deal "with the purpose

Table S.1 Mobile Money Opportunities in Brazil

Potential market	Assessment	Description	Challenges and obstacles	Potential transactions/ month
Bill payments (utilities)		▪ Little opportunity for m-money, as Brazil has a fairly efficient bill payment system controlled by banks ▪ Survey shows majority uses the correspondent bank system to pay bills	▪ Would require quick response code technology (instead of current bar code) for mobile phones to read bill information and stored value mobile accounts to be an opportunity for people without bank accounts ▪ People with bank accounts can easily use direct debit for convenient payment ▪ Requires major investment and effort, unlikely to be sufficient margin	164,311,579
Person-to-person (P2P) transfers		▪ Between 18% and 27% of respondents stated they deliver funds personally ▪ M-money P2P could be convenient alternative	▪ Only 19% of the population is rural, and there is no strong migration between rural and urban areas ▪ Most transfers take place intracity ▪ Financial sector has a wide network of agents and would create substantial competition	12,020,263
Government-to-person (G2P) payments		▪ No clear value-added proposition at this point, but possible future opportunities	▪ Mobile operator cannot compete with existing correspondent banking agent network of the banks for cash-out points ▪ Card solution in existence, controlled by banks, including agent network ▪ Cost reduction is possible through elimination of cards and use of mobile phones to store money; cooperation between bank and mobile operator is required	16,666,667
Payroll (informal sector)		▪ Relatively large informal sector ▪ There may be an opportunity in payments from banked to unbanked (e.g., domestic staff)	▪ Interoperability needed among mobile operators ▪ Partnership with banks needed for cash-out points ▪ Solution only needed for workers without bank accounts or seasonal workers	48,081,050
Public transport		▪ Large-scale opportunity with clear value proposition to replace existing system ▪ Convenience of noncash payment would be attractive	▪ Needs NFC adoption to succeed, requiring investment ▪ Strong card industry and card penetration ▪ Possible that credit card companies and/or banks may come up with a (prepaid) card rather than mobile solution	1,421,900,000
Business-to-business (B2B) payments		▪ Brazil, as a major producer and exporter of certain food products (e.g., coffee, poultry, beef), has numerous large companies working with many farmers and producers ▪ Strong retail and distribution network	▪ Not clear how many of the small businesses, farmers and food producers, and workers are unbanked and require an m-payment option	—

Potential market	Assessment	Description	Challenges and obstacles	Potential transactions/ month
International remittances	■	▪ International remittances flowing into Brazil were US$5 billion in 2009, mainly from Japan, Spain, and the United States	▪ Inbound international remittances in Brazil dropped 40% in the past three years and are only 0.3% of GDP; outbound remittances are only a fifth of that ▪ Low demand: largely urban population can access Western Union or similar services	—
Credit and microfinance	●	▪ Credit and microcredit is the largest growing market with the strongest demand from lower-income clients ▪ Presents an opportunity for m-money if the right partnerships can be created	▪ MNOs must create partnerships with banks; Oi and Banco do Brasil recently created a partnership that looks promising. ▪ There are very few large-scale microfinance institutions	—
Savings	▲	▪ Opportunity unknown	▪ Out of 10 million simplified accounts, only 5.5 million are active ▪ Explanation could be either (1) interest on savings might be low or nonexistent, or (2) lack of interest or capability for savings	—

Source: IFC Mobile Money Study 2011.

Note: ● = significant and unrealized opportunity for m-money: many of the preconditions for m-money exist, such as demand, supportive regulation, and an identifiable group of customers; ▲ = potential opportunity but there are substantial challenges; ■ = unlikely to be any m-money opportunity due to lack of economies of scale or other constraints; — = not available.

of establishing a business partnership to issue co-branded credit cards and pre-paid cards," as well as working on increased m-payments with Oi's client base. Banco do Brasil, which jointly owns a controlling stake in Cielo with the private sector bank Bradesco, has taken a 50 percent stake in a new company to be known as Paggo Soluçoe; the other 50 percent is held by an Oi subsidiary, Paggo Acquirer. Paggo Soluçoe plans to conduct activities in connection with the capture, transmission, processing, and payment of business transactions using m-payment technology and accredit current and new stores to its network of transactions originating in mobile phone devices through the existing network of Cielo and Paggo Acquirer all over Brazil.

1 Introduction

Although a number of m-money businesses have emerged around the world, few have reached significant scale. Overall, m-money uptake is limited when contrasted with its apparent promises of reaching the unbanked and underserved, of servicing existing banking clients, and of being a means for a cashless society.

Study Focus

This study examines the following in more detail:

- Existing major money flows and the critical mass of low-value, high-volume payment transactions and whether m-money can be used for them (i.e., potential demand)
- Regulatory environment and major obstacles for m-money uptake
- Business models of partnering institutions
- Payment behavior of users and nonusers (banked and unbanked), in particular where they receive funds and how they use money, including alternative means
- Existing and potential agents' networks, their requirements to run m-money as a viable business, and their training needs.

The key analytical questions guiding the study follow:

- How can m-money adoption be accelerated?
- Which countries are the most likely to have a mass market for m-money, and how can they be identified?
- What business strategies and partnership models can best exploit m-money opportunities?
- Where are the best investment opportunities?

This report provides detailed information regarding the five main topics as they relate to Brazil—business models, money flows/demand, potential user perceptions and behavior, regulation, and agent networks.

Socioeconomic Country Context

Poverty and Urbanization

Fifty million Brazilians, representing 26 percent of the population, live below the poverty line. Brazil is highly urbanized with 84 percent of its inhabitants living in urban centers. Not surprisingly, approximately 50 percent of the rural population is considered poor.

Regional Differences

Because of its large geographical size, Brazil has a diverse range of socioeconomic regions, all of which differ in population, economic drivers and industries, agricultural activities, and service sectors. Table 1.1 shows that the north and northeast

Table 1.1 Distribution of Household Monthly Income Levels in Brazil and Its Major Regions, 2008 (%)

Income level[a]	Brazil	North	Northeast	Southeast	South	Midwest
No income	1.3	1.5	1.4	1.2	1.0	1.6
<1 mimum wage	12.2	13.8	23.8	7.3	7.1	9.5
1–2 minimum wages	21.5	26.5	29.7	17.2	17.6	21.1
2–3 minimum wages	17.0	19.1	17.4	16.6	16.5	17.4
3–5 minimum wages	20.1	18.8	13.6	22.5	24.4	20.6
5–10 minimum wages	15.8	12.3	7.7	19.5	20.3	15.5
10–20 minimum wages	6.5	4.5	3.1	8.1	8.1	7.7
>20 minimum wages	2.7	1.4	1.5	3.3	3.0	4.4

Source: Instituto Brasileiro de Geografia e Estatística 2008.

a. The Brazilian national minimum wage is adjusted annually (e.g., in 2009, it was R$465 or US$264 a month). The data here categorize household income levels by multiples of the minimum wage.

regions have a higher proportion of poorer families—a point of interest since any m-money proposition would need to be regionally tailored and targeted.

Rise of the Middle Class

Another important contextual factor is the rise of the middle class in Brazil, which mirrors the country's economic growth. According to the Fundação Getulio Vargas (FGV),[1] the middle class ("C-class") increased from 42 percent of the population in 2004 to 52 percent in 2008. Typically, the C-class is employed in the formal economy, which facilitates access to credit with which they can buy their first car or home and have their first credit card. Table 1.2 shows that C-class people had a monthly income of US$445–US$680 per capita in 2007.

[1] FGV is a private foundation offering education and training (undergraduate, master's, doctoral, and applied work), research, and consultancy.

Table 1.2 Monthly Income

Class	R$ income (2007)	US$ income (2007 rate)	% of population (2005)
A1	14,250	7,357	0.9
A2	7,557	3,902	4.1
B1	3,994	2,062	8.9
B2	2,256	1,165	15.7
C1	1,318	680	20.7
C2	861	445	21.8
D	573	296	25.4
E	329	170	2.6

Source: Associação Brasileira de Empresas de Pesquisa Web site 2007, accessed May 2010.

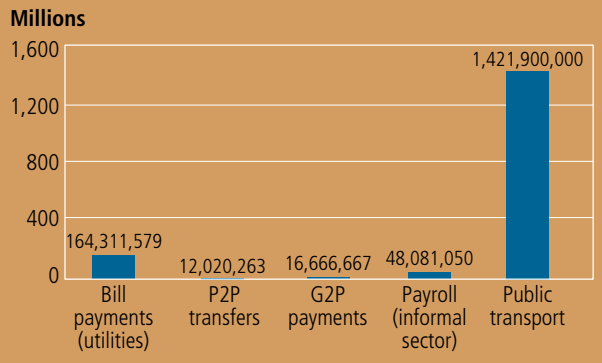
As the country develops, banks are likely to have an interest in acquiring customers from lower-income classes who will become more affluent over time.

Demand Perspective 2

This chapter provides a demand perspective for m-money, both qualitatively and quantitatively. Figure 2.1 estimates total monthly volumes (not value) of transactions in key segments that could offer m-money opportunities. However, m-money has to compete both with traditional payment methods and other electronic money (e-money) options and is therefore unlikely to be able to capture all of this potential.

Table 2.1 provides a qualitative description of these market segments in terms of their opportunities and challenges. Based on both desk research and field visits, the potential markets for m-money listed in the table were investigated. Where appropriate and possible, additional potential applications for m-money were also investigated.

Figure 2.1 Potential Monthly Transactions in Key Mobile Money Market Segments in Brazil



Source: IFC Mobile Money Study 2011.

Table 2.1 Potential Mobile Money Market Segments

Market segment	Description
Bill payments (utilities)	In developing economies, it is common to pay bills by queuing outside the utility company. Although this may be a niche market, the value proposition is to provide a convenient, safe, and fast mechanism to pay bills.
P2P transfers	The success of Kenya's M-PESA indicates that there is a large unmet demand in transferring money between people.
G2P payments	Governments make regular payments to at least 170 million poor people worldwide.[a] The value proposition is to provide a more cost-effective and time-saving service to citizens.
Payroll (informal sector)	This segment might overlap with the P2P market, but is a more specific opportunity for an m-money application allowing small businesses in the informal sector to pay their staff.
Public transport	The success of NFC technology in Japan indicates that there is potentially a massive market, particularly for NFC-enabled phones.
B2B payments	B2B payments in rural areas beyond the reach of banks are difficult and handled mainly by cash or check. M-money could provide mobile payment capabilities at each stage along the value chain.
Retail payments	Cash is less secure than e-money. Consumers may find paying with an NFC-enabled card or phone more secure and more convenient than using cash.

Source: IFC Mobile Money Study 2011.

a. Pickens, Porteous, and Rotman 2009.

Of the seven markets described, data were available for only four, although a qualitative investigation is shown for all seven, as well as additional market segments.

Bill Payments (Utilities)

Because past inflation was so rapid, payments lost value while they were in the mail. Thus, the government authorized banks to collect taxes, utility bills, and other bills (*boletos*) at banks, ATMs, or correspondent banks. Banks also issue a large number of *boletos* on behalf of utility and other companies. Thus, banks are largely both the issuer and collector of bills in Brazil.

An example of bill mass transactions is Net Servicos (Net), a cable TV, Internet, and fixed telephone service provider. It has 3.7 million subscribers and sends out 4 million bills every month (some customers have more than one service) resulting in 48 million bills per year.

The existing *boleto* payment system is fairly efficient. Customers can pay their bills through direct debit, the Internet (by entering a lengthy bar code), ATMs, or direct payment at branches and correspondent banks. Eighty-eight percent of the use of correspondent banks in cities is related to bill payments.

According to Net, 53 percent of payments are made by direct debit, at a cost to Net of R$0.50 (US$0.28) each; and 47 percent are made through the *boleto* system using the following means:

- 6 percent through Internet (entering the bar code) at a cost of approximately R$0.70 (US$0.40)
- 20 percent through direct payment at correspondent banks at a cost of approximately R$0.90 (US$0.51)
- 74 percent through other banking channels (mostly ATMs) which also costs about R$0.90 (US$0.51).

Brazil has approximately 52 electricity distribution companies. Typically, these companies cover several municipalities and, in few cases, states. The companies are mostly private with a few public (both state and federal), mainly in the north and some in the northeast regions. A notable exception is Cemig, a Minas Gerais state electricity distribution company (with some equity held by private investors); it recently gained control of Light, the private distribution company in Rio de Janeiro.

Light, serving Rio de Janeiro as well as a few bordering municipalities, has 3.7 million residential clients. Nonpayment for residential clients (households, small shops, and communities) is 3–5 percent. Only 50 percent of residential clients pay their electricity bill by the due date. Therefore, the main benefit of m-payment would be the facilitation of timely bill payment (though direct debit might be even better).

It is unclear whether a business case for m-payment of bills could be made for banks, as they are currently being paid approximately R$0.90–R$1.20 (US$0.51–US$0.68) for accepting bill payments by the payee. Thus, along with the fee from companies to issue and process *boletos*, revenue from each bill payment is currently approximately R$2 (about US$1). Reducing their own revenue is clearly not in the interest of the banks, though one bank could try to take away market share from others by offering lower costs. Mobile operators (or a third party) may have a potential business case in capturing part of the bill payment market. As an illustration, Net's annual bill payment requirements could represent potential revenue of approximately R$96 million (about US$55 million).[1]

Utilities and other companies may have an interest in reducing the costs of bill payment, but this alone is not a powerful driver; for example, Net's typical bill is above R$100 (US$57), so an extra R$2 (US$1.14) for bill payment processing is not significant. Both mobile operators and the utilities face the powerful banks, which seem to control the billing system in Brazil.

[1] Forty-eight million bills per year times R$2 (US$1.14), at June 2010 exchange rate. These figures are based on assumptions.

Furthermore, bill m-payment requires technological changes; the current *boleto* includes bar code technology, so a user would have to enter more than 30 digits into a mobile phone to pay a bill. For mobile phones to be used for bill payments, a switch to a two-dimensional quick response code would be required.

Person-to-Person Transfers

Brazil does not appear to present a strong market opportunity for mobile person-to-person (P2P) transfer. Domestic migration seems to have decreased substantially over the past few decades, and 84 percent of the Brazilian population is urban. Neither desk research nor interviews with key informants indicated a major opportunity for P2P transfers in Brazil. That is not to say that if the service were provided there would be no uptake. P2P in Kenya is, to a significant extent, between rural and urban people, and has the benefit of cost and time savings. In Brazil the main attraction would be convenience, with the sender and receiver likely to be in the same city.

If the recipient has a bank account, there are effective, low-cost means to transfer money within the country through the banks and correspondent agents, even if the sender has no bank account. Many banks offer m-money transfers to their clients, including money transfer to different banks. However, mobile banking (m-banking) use is still very small, with one of the major banks reporting 400,000 customers using it, with only three to four activities per month at the end of 2009.

The two most used m-banking services are moving money within a bank (e.g., between accounts, to investments, or to pay a credit card) and transferring money to other banks. M-banking services, including money transfer, are offered free of charge, as there is no major cost to the bank and the client pays the communications costs. There is a R$2.50 (US$1.42) monthly fee for the mobile communications/notification service to cover the cost of sending a text message to the client. The main objectives of m-banking are simply to offer a different access channel for clients, who are often also Internet banking users.

Government-to-Person Payments

The well-known Bolsa Familia program of Brazil, which aggregated several programs for greater efficiency, distributes R$95 (US$54) every month to 12.5 million families. The criteria for eligibility are as follows:

- Less than R$140 (about US$80) in income per month per person in the family
- Children must have a school attendance rate of 85 percent or more
- Pregnant women must complete the prescribed regular health checks
- Children younger than seven years old must receive the prescribed immunizations from the health ministry.

The Ministry of Social Development (MSD) pays Caixa Econômica Federal (Caixa) R$1.20 (US$0.68) per payment each month, resulting in annual revenue of R$180 million (about US$102 million) per year for Caixa. However, the MSD and Caixa are in the process of negotiating a new price. The administrative costs of the program are less than 5 percent of the benefit amount, and the payment channels represent 3 percent of the welfare amount (i.e., they are the costliest part).

However, the MSD's main problem is not the cost of the program, but rather its difficulties in reaching 300 municipalities (out of more than 5,000 in the country) that either have no established payment channel from Caixa or rely on correspondent banks that have a high turnover and frequently go out of business. Some recipients spend R$10 (US$5.68) on travel to a place where they can cash out their benefits, losing 11 percent of their welfare payment. The MSD wants to make it easier for them to cash out benefits. However, the MSD's analysis shows that mobile operators have little coverage in these communities, meaning m-payment will not be the solution until coverage improves.

Nevertheless, with US$300,000 funding from the Bill & Melinda Gates Foundation, the MSD has

planned a pilot with Oi Paggo, to be executed by Caixa. The welfare clients of Bolsa Familia will receive a text message that asks if they want their monthly R$95 (US$54) paid normally (on their Bolsa card) or transferred to a special prepaid "e-wallet" from Oi Paggo.

In conclusion, cost reduction is not a major driver for the MSD to investigate m-payment solutions for the Bolsa Familia program at this point. The program is, in general, open to mobile solutions, and plans to investigate and invest in alternative channels, as well as a greater diversity of delivery institutions (outside of banks). However, at the moment m-payment cannot solve its most pressing problem. Rather than becoming a driver for the development of a mobile solution, the MSD will wait to see how Bolsa families can benefit from expected partnerships between Caixa, other banks, and MNOs.

The MSD planned research on financial education and behavior in July 2010 among a 7,000-family sample of Bolsa Familia recipients to measure levels of financial education and financial access, as well as to improve the simplified account, develop additional products, and understand the market. Financial education is seen as crucial to raising the financial literacy level of the poor and unbanked, as well as to increasing the adoption of financial services.

The Bolsa Familia payments amount to 150 million transfers per year. But Caixa manages several government transfer programs, with roughly 200 million payments per year, with an approximate value of R$40 billion (US$22.7 billion). In addition to Bolsa Familia, these include

- unemployment insurance payments (largest in value),
- special salary raises (*abono salarial*) and social integration income,
- social security, and
- pension fund payments.

There are several others, ranging from just 500 beneficiaries (e.g., culture grants) up to Bolsa Familia, with the largest number of beneficiaries.

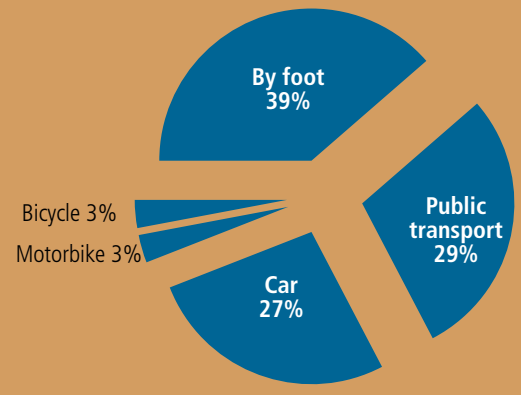
Brazil has major government-to-person (G2P) money flows, which are mostly transferred to plastic "citizen cards" (i.e., Bolsa Famila). Recipients cannot add value on the card, but the card acts as a debit card. They must present the card and withdraw the entire amount. There is certainly an opportunity in this sector if a mobile operator can link into existing correspondent banks, add additional agents, and convince the MSD of the benefits of allowing stored-value e-wallets for the recipients and additional financial services (e.g., P2P transfers).

Public Transport

Public transport presents a sizable market opportunity for m-payment. In 2008, 16.8 billion trips were taken in Brazil using public transport, which is equivalent to 0.47 trips per day per inhabitant. Use of public transport varies between larger and smaller cities, with people in larger cities using it more.

Of all trips taken, 29 percent were via public transport (figure 2.2)—21.2 percent by municipal bus, 4.7 percent by metropolitan bus, and 3.5 percent by rail. The percentage of public transport use is higher (36 percent) in cities with more than 1 million inhabitants. The average trip length in larger cities was16 kilometers, and the average trip time was 42 minutes. The typical trip cost was R$2 (US$1.14) (ANPT 2009). Brazil had 75,600 municipal buses, 24,100 metropolitan buses, and 2,600 metrorail vehicles in 2008.

Figure 2.2 Shares of Transportation Modes



Source: ANPT 2009.

Brazil has more than 180,000 taxis, with São Paulo accounting for the largest number: 33,000 (table 2.2). Taxi companies have expressed interest in wireless POS solutions.

Table 2.2 Taxi Distribution by City Population Size

City population size	Number of taxis
<1 million	110,895
500,000–1 million	18,232
250,000–499,999	21,677
100,000–249,999	18,604
60,000–99,999	10,691
Total	180,099

Source: ANPT 2009.

Low-value ticket transactions like public transport, parking, taxis, and road tolls are seen by some Brazilian players as ripe for noncash solutions, and some pilots are under way (e.g., Visa payWave). The city of São Paulo has bid out a contract to develop a noncash payment solution for its buses and metrorails to be implemented within two years.

Public transport presents a sizable market opportunity for m-money payment. About 16.8 billion trips per year at R$2 (US$1.14) each—assuming 1 percent of the fee for an m-payment option—represents a total market of R$336 million (about US$191 million) annually. However, it would require massive investment in NFC-enabled readers as well as public adoption of NFC-enabled phones. Transport users, who are among the less affluent in their communities, may be slow to adopt the new phones. It is more likely that card and POS device companies will come up with a card-based solution.

Business-to-Business or Business-to-Employees (Payroll) Transfers

There may be a small niche opportunity for business-to-business (B2B) and business-to-employee payments using m-money. Many employees receive lunch money in the form of vouchers. Also mentioned was the need for wealthier (A- and B-class) families to pay domestic staff, such as nannies, housemaids, and security guards, who often lack bank accounts and must be paid in cash. Practically all domestic workers have mobile phones, so transferring money to their phones would be an attractive alternative.

As a major producer and exporter of certain food products (e.g., coffee, poultry, beef), Brazil also has a strong distribution network. Illustrations of potential B2B or business-to-employee opportunities in this industry follow:

- Coffee provides a livelihood for between 230,000 and 300,000 farmers and employs a further 3 million people directly in the coffee industry (Oxfam 2002).
- In 2005, there were 982,604 workers employed in sugarcane cultivation and industrialization, including 414,668 workers in the sugarcane fields, 439,573 workers in the sugar mills, and 128,363 workers in the ethanol distilleries.
- The cattle industry as a whole generates 7.5 million jobs in Brazil.
- The state of São Paulo is responsible for 98 percent of Brazil's production of orange juice; the industry employs 400,000 people there and has 10 processing plants and 19,000 groves.
- AmBev (owned by AB InBev—the world's largest brewer) employs workers in 13 breweries and has 1 million points of sale; there are two other brewers, one serving 600,000 retailers, the other 400,000.
- Souza Cruz, a subsidiary of BAT, is the largest tobacco company in Brazil. Souza Cruz has 7,000 direct employees and 3,000 seasonal workers (*safreiros*) hired during the harvest to purchase and process the tobacco. The company buys the tobacco from farmers: about 40,000 integrated producers receive seeds,

inputs, technical assistance, and guarantee of purchase of their crop.

- Brasil Foods, which operates 41 meat processing plants, 16 milk/dairy products and dessert processing plants, two margarine processing plants, and one soybean processing plant, has approximately 105,000 employees.
- JBS-Friboi, another food company, has more than 23 plants in nine Brazilian states and more than 16,900 employees in Brazil. The clients of JBS in Brazil are essentially sellers, restaurants, and leather tanning units. JBS-Friboi's current client portfolio includes more than 6,000 companies in the domestic market. In 2008, 11,240 clients were served on the domestic market.

An interesting example for a wholesale/distribution business and its relations to its customers is Grupo Martin (GMartins). GMartins is the largest wholesaler/distributor in Latin America, with more than 20,000 customers (retailers) in Brazil. GMartins wholesales foods, pharmaceuticals, construction materials, white goods, and electronics. GMartins is located in Minas Gerais, a central location for distribution in Brazil.

In 1990, GMartins created its own bank, Tribanco. Tribanco provides financing and banking services to GMartins retail customers, such as receivables discounting, equipment purchase financing, investment alternatives, and even credit cards to their clients. IFC (International Finance Corporation) invested in Tribanco in 2005. Tribanco follows GMartins to the most remote and neglected areas of Brazil, where many small shops and consumers have virtually no access to financial services. The credit cards provided by Tribanco are often people's first credit card. IFC financing is designed to support Tribanco as a pioneer microfinance operator in a large, underserved market.

Tribanco sales staff in Rio de Janeiro said no obvious benefit of m-money to its clients was apparent. However, a proper assessment could help to ascertain any opportunities with GMartins and/or Tribanco.

Credit and Microfinance

Credit and microcredit is the largest growing market, with the strongest demand from lower-income clients. This market would present an opportunity for m-money if the right partnerships can be created.

Credit and Payroll Loans

Consumer loans and credit have grown steadily—by 28 percent a year from 2006 to 2008—due to reforms that include a law that allows the lender to remain the owner of the asset acquired (such as a car or apartment) until it is fully paid off. Prior to this legislation, lengthy legal procedures had to be employed to recover the property in case of default. After the new law was passed, the number of credit cards increased from 53.5 million in 2004 to 137.8 million in 2008, even though credit is expensive (*The Economist* 2009). Brazil's leading consumer credit rating agency, Serasa Experian, reported in March 2010 that consumer credit demand had risen 32.5 percent since March 2009; the lowest-income group (those earning less than US$275 a month) showed a slightly higher rise in demand of 32.9 percent.

Issuing credit cards to unbanked customers, or for banks to issue credit cards to noncustomers, is a fairly common practice in Brazil.

Payroll loans are also very popular in Brazil, as another means of credit. As part of the government's financial inclusion strategy, a regulation was issued enabling banks to make payroll-consigned loans. Data from the Central Bank of Brazil show the balance of payroll loans was R$75 billion (about US$42.6 billion) in February 2010, up threefold from R$25 billion (about US$14.2 billion) in February 2007. More than 2 million contracts were added per month. More than 56,000 companies offer payroll loans with an average value of R$3,665 (US$2,083) at an interest rate that only dipped below 20 percent in 2010.

Microfinance

The Brazilian National Development Bank (BNDES) manages the Brazilian Program for

Guided and Productive Microcredit, created in 2005. The program defines singular credit cooperatives, governmental agencies, microfinance credit societies, and public interest civil societies.

The Sociedade de Crédito ao Microempreendedor (SCM) and Organização da Sociedade Civil de Interesse Público (OSCIP) are the institutions for productive and guided microcredit. Out of 1,934 eligible microcredit institutions (including all commercial banks), 308 (16 percent) are registered with the Program for Guided and Productive Microcredit, and 152 (49 percent) are supported by the BNDES microcredit program.

BNDES lends to the above-mentioned microcredit institutions, providing affordable funds and aiming to improve the institutional development of nongovernmental microfinance institutions (MFIs) according to financial system standards. Rules for microcredit institutions include the following:

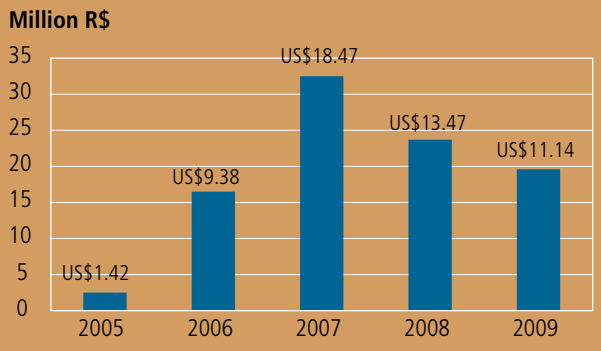
- **Maximum interest rate:** 4 percent per month plus an initial tax of up to 3 percent
- **Maximum amount:** R$15,000 (US$8,526)
- **Maximum annual revenue:** R$240,000 (US$136,424).

The main challenge to the MFI sector in Brazil is that microfinance has a narrow regulatory definition and stringent requirements limiting interest rates and specifying that credit must be used for productive purposes and not for consumption. Credit given at higher interest rates is not considered microfinance. Thus, vast resources for microfinance are not used. Since 2003, Brazilian banks must allocate 2 percent of their demand deposits for microfinance, but apparently close to 50 percent of these funds remain unused.

BNDES's current portfolio of loans is R$80 million (about US$45.5 million), with R$250 million (about US$142 million)over three years. Figure 2.3 shows the disbursal of funds since the inception of the BNDES Microcredit Program (PMC).

Active borrowers from PMC can be categorized as follows (BNDES 2010):

Figure 2.3 PMC Annual Disbursement



Source: BNDES 2010.

- 89 percent have loans of less than R$3,000 (US$1,705)
- 92 percent are not registered (i.e., they are in the informal sector)
- 64 percent are women
- 52 percent are low income (income equivalent of one to three times the minimum wage).

The number of capable MFIs is very small in Brazil. Table 2.3 shows the main players and number of active borrowers; this information excludes credit cooperatives, which in some cases are professional associations.

The number of active borrowers is consistent with the estimate given by BNDES, which estimated 753,000 active clients at the end of 2009.

Table 2.3 Main Microfinance Institutions by Number of Borrowers

MFI	Number of active borrowers
CrediAmigo	500,000 plus
Banco Popular do Brasil	140,000
Real Microcredito	90,000 plus
Ceapi	22,000
Andi	20,000
Total	~780,000

Source: Brazilian IFC office, March 2010.

Considering the size of Brazil's population, this is a very small number.

In contrast, small businesses account for almost half of the country's formal employment. The World Bank reports that nearly 60 million people receive their primary income from one of Brazil's 4.1 million formal small businesses. An additional 14 million informal small businesses contribute to the income of Brazil's poor. To continue to fuel Brazil's economic growth, these microenterprises need access to credit; however, Brazil has a relatively low microfinance penetration rate compared with its neighbors.

Overall, the credit market is very attractive for m-money, and the only m-money provider in Brazil, Oi Paggo, offers a credit service. The target markets are both high-end credit card customers and lower-income people, who have exhibited a strong demand for credit. However, these two groups must be addressed through different products and strategies.

Some banks and mobile operators are still struggling to form a business model and partnerships, as well as to define product offerings for these markets; however, they are keeping their cards close to the chest while developing their strategies. Nevertheless, most stated that they would launch more products in these areas soon.

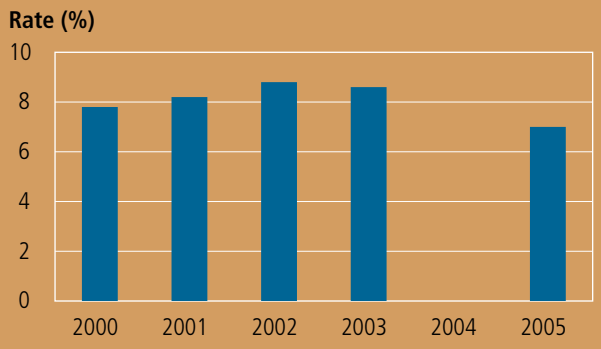
International Remittances

International remittances flowing into Brazil were US$5 billion in 2009, mainly from Japan, Spain, and the United States. This is equivalent to 0.3 percent of national GDP, a low figure compared with countries with a high international remittance market (e.g., in the Philippines, a poorer country, incoming remittances amounted to US$16.4 billion in 2008). Outbound remittances were US$1.2 billion. Inbound international remittances in Brazil dropped 40 percent in the past three years (Western Union 2010). Thus, remittances do not seem a major opportunity for m-money in Brazil.

Savings

Figure 2.4 shows Brazil's household net savings rate. The Brazilian government's strategic objective is financial inclusion. In 2004, Brazil introduced, as part of its financial inclusion policies, a simplified bank account (*conta simplificada*) with both simplified current and savings accounts. Central Bank data from February 2010 show that while there are slightly more than 10 million simplified current accounts, only 5.5 million (55 percent) are considered active. There are only 192,281 simplified savings accounts, with 16,758 (9 percent) considered active. It appears that account holders are either not interested in saving or not able to save, or there is a problem with the design of this simplified account. There is no information on whether interest is paid on either account, which could be an issue.

Figure 2.4 Annual Household Net Savings Rate



Source: OECD, http://www.eyestat.com/en/Household-Net-Saving-Rate/Brazil/graph.html.

Note: Data were not available for 2004.

The rules for simplified accounts are as follows (CGAP 2010b):

- Only persons with no other accounts can open them.
- The maximum balance is R$1,000 (US$568) (unless there is also a microcredit account).
- Banks cannot charge maintenance fees for the first 12 transactions per month.

Thus, banks depend on income from interest on the float. Caixa suggests that the maximum balance be revised upwards to R$3,000 (US$1,705).

Caixa has the lion's share (7 million) of the simplified accounts. Two million are held by Bolsa Famila recipients. The MSD negotiated with Caixa to offer simplified accounts, starting with a pilot in 2008. The MSD's initial objective was to reduce the administrative costs of the Bolsa Familia program by getting accounts for recipients. Although the MSD pays Caixa the same amount whether it goes into a simplified account or into a prepaid Bolsa card, there might be cost reductions in the future. The other MSD objective was to promote financial inclusion for the Bolsa Famila recipients. An account makes it easier to offer them additional services, such as microcredit, automatic debit, and transfers.

The MSD and Caixa have an education and awareness campaign for simplified accounts; they distribute pamphlets and folders at correspondent banks, and Caixa advertises the simplified account on television. The simplified account uptake was fast initially, but has slowed down. Nevertheless, the MSD and Caixa planned to have 4 million simplified accounts among Bolsa Familia recipients by the end of 2010.

Caixa is still studying whether the low-income sector (e.g., Bolsa Familia recipients) is profitable. Caixa feels it needs to change the behavior of low-income customers because they typically withdraw all of their cash, rather than leaving money in the account as savings (which makes it unprofitable for Caixa because there is no interest on the float). Future initiatives, both by Caixa and the MSD, are therefore focused on financial education programs and studies to understand the financial behavior of low-income families in order to offer better products.

Although there do not appear to be any immediate opportunities for m-money in savings products, the government's focus on financial inclusion, the planned expansion and improvements of the simplified accounts (current and savings), planned studies to understand savings behavior among low-income families, and planned financial educational campaigns, may bode well for opportunities in the future.

3 Parameters of the Mobile Money Ecosystem

The potential m-money market in Brazil was analyzed using several parameters that could be incentives or barriers. These parameters were identified through a literature review and refined during the field visits. Table 3.1 (next page) provides an overview of the parameters selected, and the following sections give an analysis of relevant parameters in Brazil.

Enabling Regulation

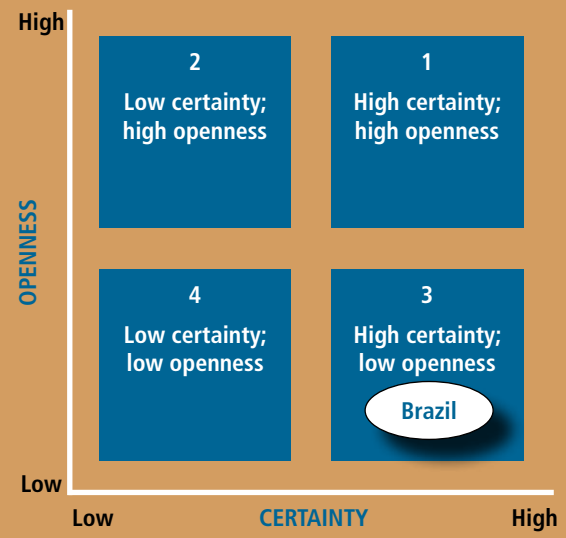
There is certainty in Brazil's m-money market, but no openness, at least for players other than banks (figure 3.1). M-payment regulation is planned but not expected before 2011. As a civil code jurisdiction, it has low openness for new entrants. Nevertheless, banks enjoy a high degree of certainty because they have a well-developed relationship with the Central Bank of Brazil and respond to concerns of the Central Bank with a cooperative and self-regulatory approach.

Know-Your-Customer Regulations

Since 2004, the Central Bank has permitted simplified bank accounts to persons having no other bank accounts. These accounts have a maximum balance of R$1,000 (US$568) for a normal account and R$3,000 (US$1,705) for a client with a microcredit account. Banks cannot charge for the first 12 transactions per month, there is no maintenance fee, and the microcredit business is also limited. As a consequence, these accounts—there are currently 5.5 million active ones[1]—are unprofitable for banks and most are supplied by the state-owned banks Caixa and Banco Popular do Brasil.

However, the simplified accounts do have a more relaxed know-your-customer (KYC) requirement than regular checking accounts. Opening a

Figure 3.1 Brazil's Mobile Money Market in the Porteous Regulatory Environment Model



Source: IFC Mobile Money Study 2011, based on Porteous 2006.

[1] Central Bank of Brazil, Microcredit Statistics for February 2010 (http://www.bcb.gov.br/?MICROFIN; accessed June 16, 2011).

Table 3.1 Parameters Affecting the Success of Mobile Money Services

Category	Parameters			
Socioeconomic context	Population Poverty Urbanization; rural population	GDP/capita GDP by region Gini coefficient[a]	Geographic area	Remittance flow
Regulation	Clear and risk-based regulatory framework M-money license requirements Obstacles to international remittances	Know-your-customer regulation Bank outsourcing Mandatory services banks must offer	Agent regulation Interoperability requirements Regulations on new branches	ID system Pricing restrictions on accounts Level of expensive requirements
Existing access to financial services	Reach of networks/agents Informal financial access Competitiveness of banking industry	Penetration/use of cards Nonbank provision of financial services	Penetration/use of prepaid cards Cash-electronic transaction ratio (use of cash)	Internet banking usage Unbanked population
Existing mobile market situation	Population penetration/ coverage Churn[b]	Geographical coverage Level of fragmentation of industry	Level of competition	3G penetration/usage
Potential demand	Bill payments B2B transfers	Public transport Credit and microcredit	P2P transfers International remittances	G2P payments Savings Retail payments
Retail sector	Retailers with national coverage	Level of fragmentation	Postal network	Other distribution networks
Payment system	POS terminal penetration	Mass payment acceptance	Card penetration Dominant payment methods in the economy	National switch[c] Third-party payment processors
Pricing	Distortion through intervention/regulation	Banking services pricing		
User perceptions	Trust in mobile operators versus banks	Willingness to pay for m-money service	Cultural factors	

Sources: IFC Mobile Money Study 2011; CGAP.

a. The Gini coefficient is a measure of the inequality of a distribution, with a value of 0 expressing total equality and a value of 1 maximal inequality.

b. "Churn" in the telecommunications industry means customers move from one network operator to another.

c. "National switch" here means an online interbank fund transfer system.

regular checking account requires a government-issued official identification, such as a taxpayer card that indicates marital status, parents' names, profession, date and place of birth, address, and telephone number. Opening a simplified account requires less stringent alternative identification, such as records of welfare payments. Nevertheless, the client must present government-issued identification within six months of opening the account. Furthermore, most banks do not take advantage of the relaxed requirements because they are concerned about fraud (CGAP 2010b).

Although regulations allow simpler KYC requirements, potential low-income clients eventually still require official taxpayer cards and (eventually)

government-issued identification for opening a simplified account.

We were not able to ascertain how many Brazilians do not have government-issued identification. However, it is notable that as of October 2010 a new magnetic, chip-based ID card will begin to be issued.

Regluation of Agents

Brazil is well known for its progressive regulation and extensive network of correspondent banking agents. Agents are allowed to conduct the following functions: deposits, withdrawals, and transfers; consultations; prepaid mobile phone top-ups; bill payment; forwarding of applications for accounts, loans, and credit cards; initial credit analysis; loan collection; and international transfers. All Central Bank–licensed financial institutions are allowed to use agents, and the only requirement is to register agents online. Agents must be legal entities.

Mobile Money–Related Regulation

Brazil has no specific m-money regulation, and there is uncertainty within the Central Bank over whether it has the power to regulate m-money. Congress is discussing changing current Bank Law No. 4595 (1964), which specifies the role, powers, and functions of the Central Bank. The Central Bank hopes the revised law will give it explicit power to regulate m-money, m-banking, and m-payment.

Current regulations require any organization conducting "deposit taking" to be licensed by the Central Bank. While not explicitly precluding the use of m-money by nonbanks, this requirement creates uncertainty for companies without a Central Bank license in regard to providing services such as P2P, prepaid cards, or e-wallets. Brazil has a civil law system that requires activities to be stated positively in law or regulations in order to be allowed.

The forthcoming regulation on the creation of (nonbank) payment institutions will affect m-money development in Brazil. A first draft of regulations regarding the definition and creation of payment institutions is currently under review by the Central Bank's legal department. These regulations would address m-payment as a subcategory and provide clarity over emerging payment approaches, such as e-wallets and prepaid cards, and provide a framework for supervising such institutions. This regulation can be expected at the earliest in 2011.

In a related initiative, the Central Bank also entertains plans to create a National Retail Payment Committee through regulation, and is in talks with the Brazilian Federation of Bank Associations (FEBRABAN). This committee, which is to include representatives of banks, telecommunications operators, and clearing houses, would resolve questions such as the governance of the retail payment industry and conflicts of interest.

Existing Access to Financial Services

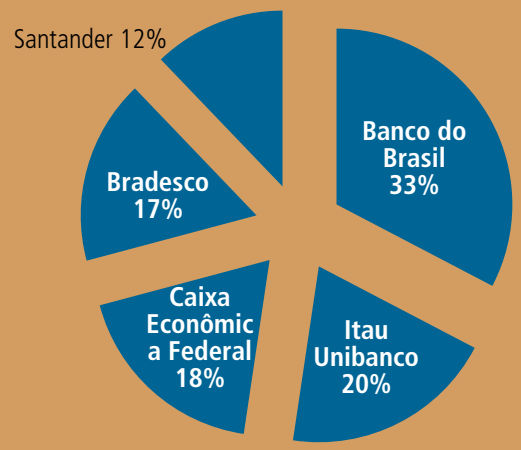
Brazil has, due to its inflationary history, a technologically advanced financial system and banking sector and a diversity of access channels. The use of electronic payment channels (such as debit or credit card, and direct debit) is on par with nations like the United States. In Brazil, checks represented only 18.9 percent of noncash payments, while the United States still relied on paper-based checks for 28.6 percent of noncash payments in 2007 (Central Bank of Brazil 2009a, 2009b).

Furthermore, according to some data, while only 43 percent of adults use financial services (FAI 2009), there are a variety of informal and formal means that provide access to finance, such as quasi-credit through retail shop cards and payroll-consigned loans.

With a hybrid retail banking system, including state-controlled and private sector banks, the market does not appear to be distorted, and state-controlled banks are commercially oriented and typically publicly traded on the Brazilian stock exchange. With more than 150 banks with more than 19,000 branches, Brazil has a strong, competitive financial sector. There is no single bank

with more than a 33 percent market share among the five largest banks (figure 3.2).

Figure 3.2 Top Five Banks by Deposits



Source: CIAB FEBRABAN, http://www4.bcb.gov.br/fis/TOP50/ingl/Top50I, acccessed May 2010.

While there are marked regional differences and the metropolitan centers are better served than most states, the differences are not dramatic (e.g., ATM or POS device per inhabitant is twice the Brazilian average in a couple of states, but mostly it is closer to the national average). An exception might be very remote areas (e.g., the Amazon). Overall, the financial sector has considerable reach throughout the country; however, any m-money strategy must be regionally targeted and tailored.

Unbanked Population

Estimates about the unbanked population vary depending on the definition: the Consultative Group to Assist the Poor (CGAP) estimates that 70 percent of the adult population still lacks access to bank accounts but admits that there are no official sources to verify the number (CGAP 2010b). The Financial Access Initiative (2009) says that 43 percent of adults in Brazil use formal or semiformal financial services (i.e., banks or MFIs). However, there is a large "informal" financial sector; an example is the retail cards issued by major stores, which provide consumers credit at zero or low interest and the ability to pay for purchases in installments. There was a 101 percent increase in retailer cards from 86 million in 2004 to 173 million in 2008, with over a billion transactions in 2008, at an average value of R$52 (about US$30). With a total population of slightly more than 190 million, the retail card ratio is 0.90. We estimate that a much larger proportion of the adult population has de facto access to some financial services if informal means such as retail card credit are included.

Agent Networks

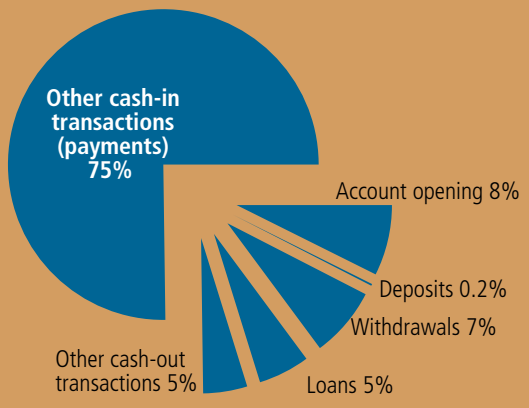
The economics, business models, and characteristics of the agent networks have been studied in detail, especially by CGAP. Numbers on agent networks vary. Central Bank data from January 2010 state that there are 150,000 registered agents, including credit cooperatives. However, informally, it is estimated that roughly 30,000 are not active, and 40,000 are limited to offering payroll credit through door-to-door visits, leaving about 80,000 correspondent agents.[2] Typical entities acting as correspondent banks are supermarkets (chains), lottery houses, pharmacies, drugstores, post offices, and car dealers.

Figure 3.3 shows that correspondent banks are used overwhelmingly (75 percent) for bill payments.

Conversely, data from a CGAP and FGV survey show that there is a marked difference in the use of

[2] Interview with FGV.

Figure 3.3 Services for Which Correspondent Banks Are Used

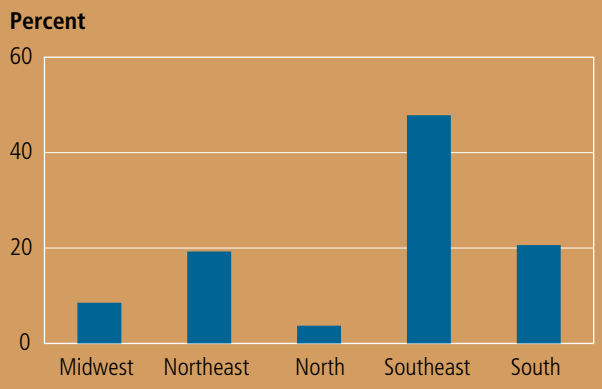


Source: CGAP and Central Bank of Brazil 2009.

correspondent agents among urban, semi-urban, and rural areas. While bill payment accounts for 88 percent in cities, it is only 40 percent in rural areas (CGAP 2010a). Deposits and withdrawals are more important in rural areas with 38 percent of transactions, compared with 8 percent in cities.

Geographical distribution throughout the country is uneven, with the majority of correspondent banks in the more populous and prosperous southeast (figure 3.4).

Figure 3.4 Geographic Distribution of Correspondent Banks



Source: CGAP and Central Bank of Brazil 2009.

Correspondent banking in Brazil is clearly vital for increased access to financial services. However, some potential developments may harm or reduce the number of correspondent banks, including the following:

- The viability of agent networks could be threatened by lingering legal challenges, which include agent employees demanding wage parity with bank branch workers.
- The regulatory oversight body for pharmacies is considering new regulation that will make the pharmacy business incompatible with the correspondent bank business. A large number of correspondent bank agents are pharmacies.
- The fact that correspondent banks remain targets of (organized) crime may influence some larger networks, such as lotteries, to abandon the business. The CGAP and FGV survey (CGAP 2010a) found that 41 percent of the 49 agents interviewed reported being robbed.

ATMs and POS Devices

In 2008, there were 158,414 ATMs in Brazil, of which only 43 percent were open access, that is, they allowed use by customers from other banks. There were 3.2 million POS terminals in the country.[3] Interoperability of ATMs and POS terminals is a considerable concern, on which the Central Bank has been working since 2002, though it does not have regulatory power to enforce interoperability. Some shops have up to eight different POS terminals to serve their customers.

The main development in this sector is that the two major acquirers in Brazil, Cielo and Redecard, which jointly control 90 percent of the market, became nonexclusive in July 2010. This will allow new entrants into the POS market, but may not change the market structure dramatically. However, Santander Bank, which was part owner of one of the two acquirers, is selling its share to enter the POS market.

Although some small pilots are developing mobile phone POS devices, industry informants voiced concerns that the business case is not lucrative, and it may be more attractive to equip POS devices with NFC technology.

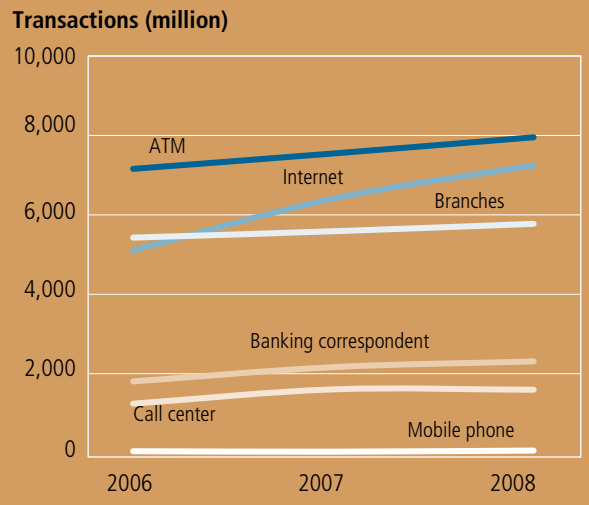
Financial Access Channels

As can be seen in figure 3.5, Brazil has various options for accessing financial services, with ATMs and Internet banking being the most popular (and the latter showing strong growth). In terms of ATM terminals per inhabitant, Brazil's penetration is on par with those of France, Germany, and Italy.

In 2008, 65 million transactions were made using the mobile phone, which is equivalent to 0.3 percent of all transactions (Central Bank of Brazil 2009a, 2009b).

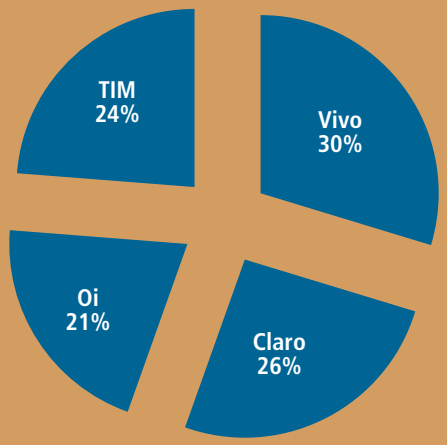
[3] As there is overlap and duplication, the number of POS terminals is not identical to the number of retailers accepting credit or debit cards; it is estimated that 1.6 million retailers allow card payment.

Figure 3.5 Access Channels to Financial Services



Sources: Central Bank of Brazil 2009a, 2009b.

Figure 3.6 Market Shares of Major Mobile Operators



Source: Company subscriber numbers as of mid-2010.

Table 3.2 (on the next page) shows geographical imbalances in physical access to ATMs and POS terminals, with Rio de Janeiro and São Paulo accounting for more than 40 percent of terminals. M-money strategies may therefore need to be geographically targeted.

Existing Mobile Access and Market Situation

Brazil has four main mobile operators, accounting for 95 percent of the market. As table 3.3 shows, the mobile operators appear healthy, though operating in a competitive market, with a Herfindahl-Hirschman Index (HHI) of 2527.

No mobile operator has more than a 30 percent market share (figure 3.6), in contrast to some countries where a single dominant mobile operator has facilitated the development of m-money.

While 2G mobile coverage of the population is slightly above 90 percent, 3G network roll-out was estimated to cover more than 60 percent of the population by the end of March 2010. However, out of more than 5,000 municipalities, just 732 were reached by 3G networks in June 2010, meaning only the big cities and population centers

Table 3.3 Financial Data for Key Mobile Operators

	FY2009 EBITDA			FY2009 EBIT		
Mobile operator	R$ (millions)	US$	% margin	R$ (millions)	US$	% margin
America Movil (Claro)	2,906	1,652	24.2	476	271	4.0
Oi	7,315	4,158	24.5	1,609	915	5.4
TIM	3,476	1,976	25.0	580	330	4.2
Vivo	5,218	2,966	31.9	1,961	1,115	12.0

Sources: Company annual reports.

Note: EBITDA = earnings before interest, tax, depreciation and amortization; EBIT = earnings before interest and tax.

Table 3.2 Access to ATMs and POS Devices by State

State	ATMs			POS devices		
	Quantity	%	Coverage[a]	Quantity	%	Coverage[a]
Acre	361	0.2	1,914	6,239	0.2	111
Alagoas	1,257	0.8	2,511	33,688	1.1	94
Amapá	346	0.2	1,811	6,905	0.2	91
Amazonas	1,543	1.0	2,199	31,940	1.0	106
Bahia	7,343	4.6	1,993	186,642	5.9	78
Ceará	3,297	2.1	2,593	81,737	2.6	105
Distrito Federal	3,637	2.3	717	79,218	2.5	33
Espírito Santo	2,832	1.8	1,231	55,943	1.8	62
Goiás	4,321	2.7	1,372	82,102	2.6	72
Maranhão	1,978	1.2	3,219	37,403	1.2	170
Mato Grosso	1,994	1.3	1,505	41,489	1.3	72
Mato Grosso do Sul	1,887	1.2	1,251	30,932	1.0	76
Minas Gerais	15,770	10.0	1,270	263,299	8.3	76
Paraná	9,722	6.1	1,099	198,893	6.3	54
Paraíba	1,793	1.1	2,103	42,245	1.3	89
Pará	2,701	1.7	2,751	49,163	1.5	151
Pernambuco	4,380	2.8	2,011	116,291	3.7	76
Piauí	1,105	0.7	2,846	17,463	0.5	180
Rio de Janeiro	16,877	10.7	949	357,138	11.2	45
Rio Grande do Norte	1,680	1.1	1,868	39,955	1.3	79
Rio Grande Do Sul	11,885	7.5	918	190,990	6.0	57
Rondônia	790	0.5	1,904	15,846	0.5	95
Roraima	229	0.1	1,841	5,827	0.2	72
Santa Catarina	5,514	3.5	1,110	117,427	3.7	52
São Paulo	53,126	33.5	779	1,059,615	33.4	39
Sergipe	1,201	0.8	1,682	17,487	0.6	115
Tocantins	845	0.5	1,529	11,023	0.3	117
Total	158,414	100.0	1,740	3,176,900	100.0	88

Sources: Central Bank of Brazil 2009b; 2009 population estimates from http://www.ibge.gov.br.

a. Number of inhabitants per ATM/POS device.

are served. Vivo planned to more than double that by the end of 2010.

By April 2010, 8 percent of mobile subscribers were 3G users (figure 3.7) (IHS Global Insight 2010).

Customer churn in the Brazilian mobile industry was between 2.5 percent and 3.5 percent per month, based on 2009 fourth-quarter reports.

Retail Sector

Brazil has a well-developed retail sector, including some of the largest retailers in Latin America. Many are nationwide, whereas some are strong only in certain parts of Brazil. As 81 percent of the population lives in urban areas, there is wide coverage of the population. The companies Casas Bahias and Grupo Pão de Açúcar illustrate the nature of the retail sector in Brazil.

Figure 3.7 Vivo 2G Network Coverage in Brazil, 2010

Source: © 2011 GSM Association and CollinsBartholomew Ltd.

Casas Bahias, which sells furniture and home appliances, has more than 565 stores in 11 states and the Federal District. Casas Bahias makes its profit by charging interest on installment plan purchases, making it possible for low-income customers to purchase products that they would not be able to pay off in a single payment. The chain is currently owned by Grupo Pão de Açúcar, which purchased it in December 2009.

Grupo Pão de Açúcar is the largest Brazilian retailer of food, general merchandise, electronic goods, home appliances, and other products from its supermarkets, super stores, and home appliance stores. The company has 1,647 stores throughout Brazil, including Casas Bahia.[4]

[4] Grupo Pão de Açúcar Web site (http://www.gpari.com.br/grupopaodeacucar/web/conteudo_en.asp?idioma=1&conta=44&tipo=31641), accessed June 16, 2011.

User Survey Findings 4

Brazil's survey was different from and therefore not easily comparable to the survey results from Nigeria, Sri Lanka, and Thailand. In Brazil, the user survey was conducted among users of Oi Paggo, which is a mobile service acting as a credit card with a limited number of merchants accepting it. Many use it to pay their phone bills and for airtime top-up. It does not have any P2P functions or cash-in and cash-out.

At the time of the survey, Oi Paggo was solely owned by the mobile operator Oi. Oi is focused mainly in the northeast of the country. Oi Paggo provided telephone contact details of its customers, and interviews were conducted via phone (all other country surveys were conducted face to face).

For the survey, an m-money user was defined as an active user of the Oi Paggo service; a nonuser was defined as a person who used banking or correspondent banking services and mobile phones, but not Oi Paggo or other m-money services.

The user survey was conducted by phone with customers in the large cities of Fortaleza, Recife, and Salvador, which have populations in excess of 1 million and are major economic centers in their states; as well as in the cities of Campina Grande, Maracanau, Mosorro, and Parnamirim, which have populations of less than 1 million and are more distant from core metropolitan areas and economic influences. A total of 110 users were interviewed.

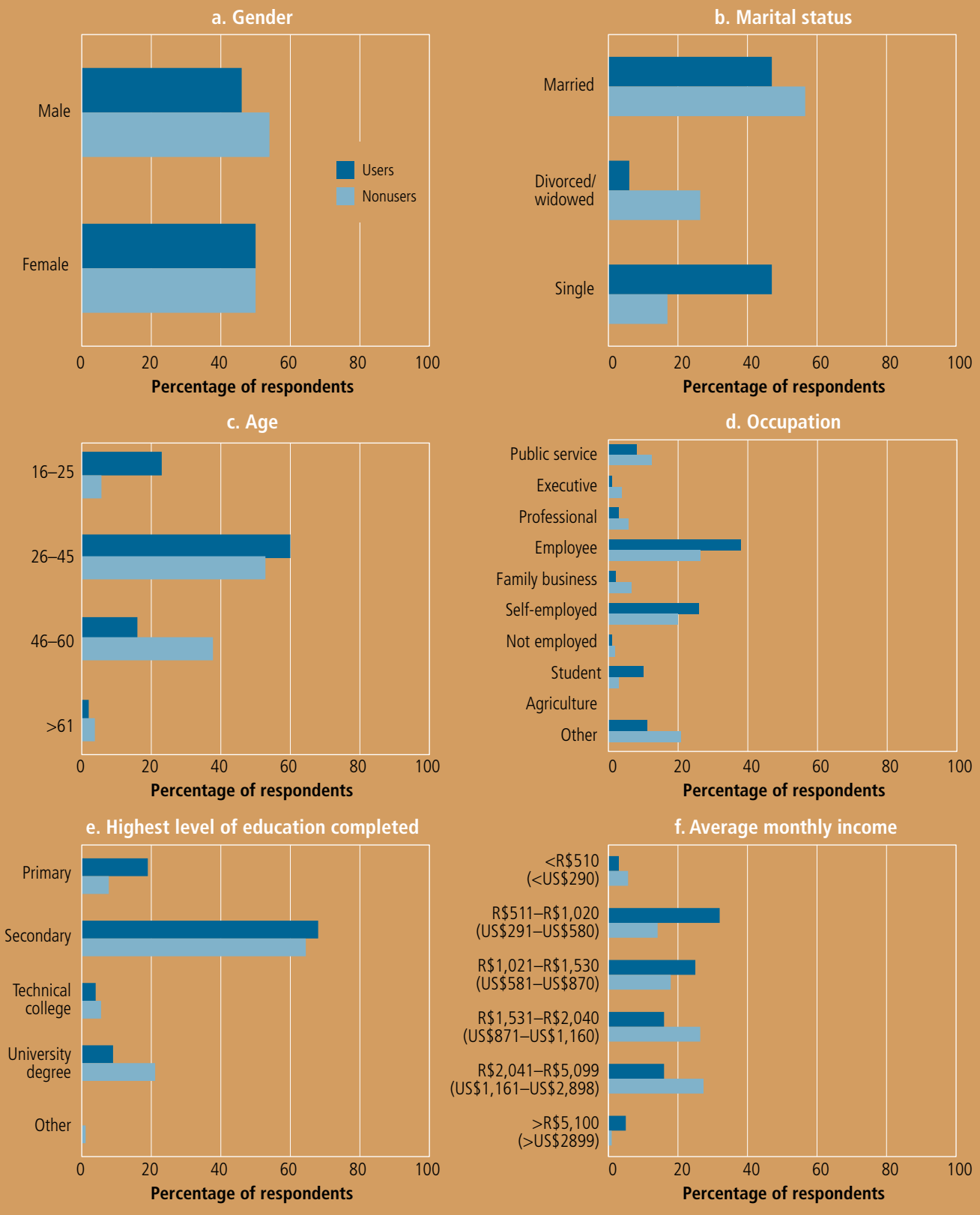
In contrast, the nonuser survey was conducted face to face in Rio de Janeiro and São Gonçalo, the latter being a slightly poorer neighboring municipality of Rio de Janeiro. As a consequence, the demographic differences between users and nonusers are largely due to their locations: users in the northeast were less well-off than the nonusers in Rio de Janeiro and surrounds, as the figures on average monthly income clearly show. A total of 109 nonusers were interviewed.

Socioeconomic Profile of Respondents

Oi Paggo m-money service users were younger and less affluent than nonusers (figure 4.1.) The survey data show the following trends for users:

- Slightly more were female.
- There was a higher representation in the younger age groups; consequently, fewer were married.
- The four largest occupational groups in order were employees, self-employed, "other," and students.
- They had slightly lower levels of higher education, possibly because they were located in the poorer regions of Brazil and younger so they had not yet completed their higher education.
- They were clearly less well-off, which is connected to the fact that there is such a strong income difference between the Rio de Janeiro area and the northeast of the country.

Figure 4.1 Socioeconomic Characteristics of Mobile Money Users and Nonusers

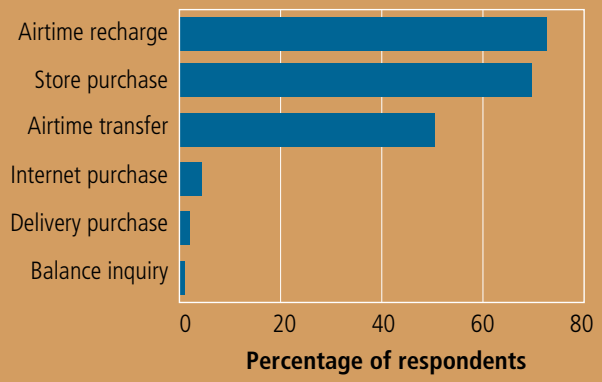


Source: IFC Mobile Money Study 2011.

These socioeconomic characteristics—younger, less affluent, more students, more self-employed—may explain the higher demand for alternative credit services such as Oi Paggo.

Oi Paggo users favored mobile phone–related services such as airtime purchase and airtime transfer, and the credit card function for store purchases; these were also the main services offered (figure 4.2).

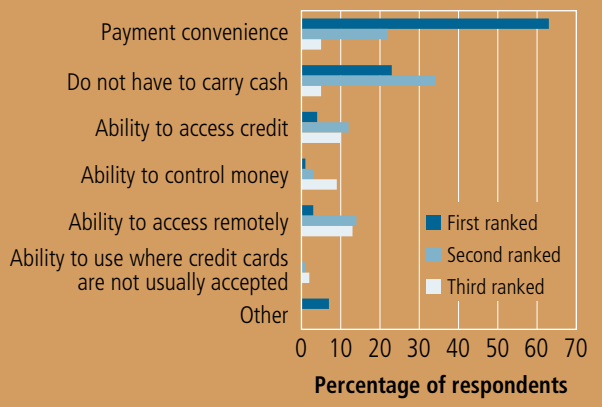
Figure 4.2 Oi Paggo Services Used



Source: IFC Mobile Money Study 2011.

The top reasons respondents used the Oi Paggo service was for the convenience and the ability to make transactions without cash; these categories comprised most people's first and second choices in figure 4.3.

Figure 4.3 Top Three Reasons for Using Oi Paggo Services



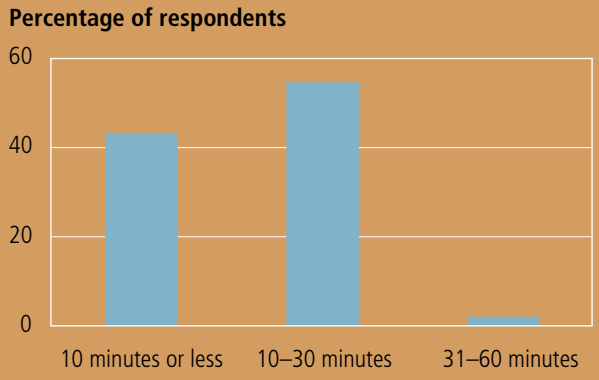
Source: IFC Mobile Money Study 2011.

Access to credit, surprisingly, wass clearly less important, with fewer than 5 percent of users citing this as their top reason for using Oi Paggo, and only slightly more than 10 percent giving this as their second reason. This does not necessarily mean there is little demand for credit, but rather that Oi Paggo was not seen as a credit service but as a service used to provide convenient payment.

Nonuser Survey

Ninety-two percent of nonuser respondents had bank accounts. Only 2 percent of respondents took longer than 30 minutes to access a financial service point where they could withdraw money (figure 4.4). This supports the notion that Brazil is well served (though the nonuser survey was conducted in the wider Rio de Janeiro area, where service points are plentiful).

Figure 4.4 Trip Length to Withdraw Cash



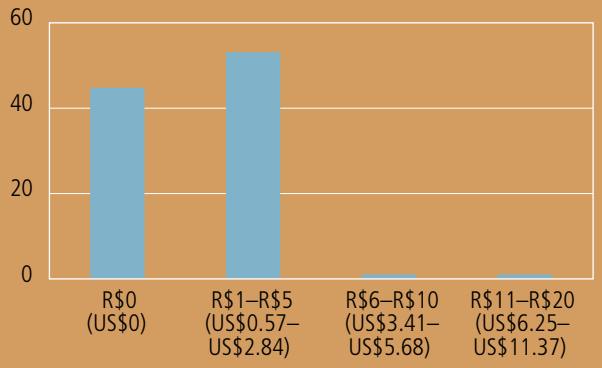
Source: IFC Mobile Money Study 2011.

More than 90 percent of responders said it costs R$5 (about US$3) or less to reach a place where they could withdraw money, with over 40 percent not paying anything (figure 4.5).

The value proposition of m-banking and m-money was not clear to customers in Brazil. Although 60 percent of nonusers had heard about m-banking services, figure 4.6 shows that most nonusers did not know whether m-banking was cheaper than traditional banking services.

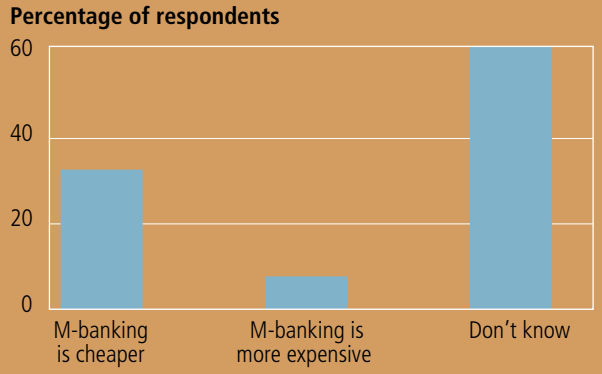
Mistrust of m-banking and its aspects outweighed trust in the new service (figure 4.7).

Figure 4.5 Cost of Trip to Withdraw Cash



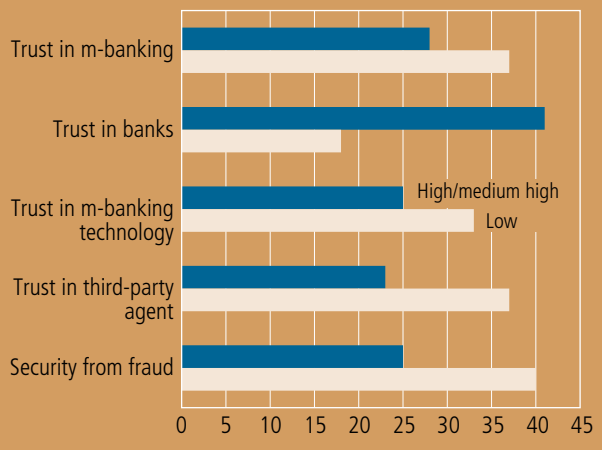
Source: IFC Mobile Money Study 2011.

Figure 4.6 Perception of Relative Expense of Mobile and Traditional Banking



Source: IFC Mobile Money Study 2011.

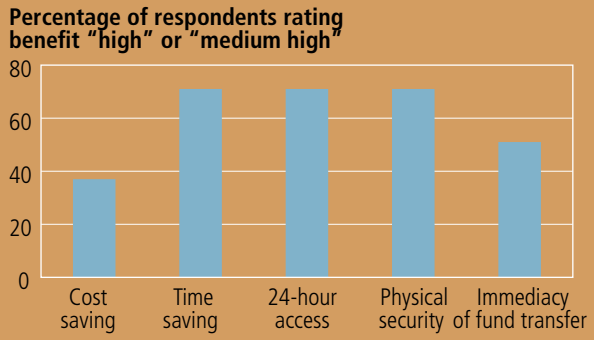
Figure 4.7 Degree of Trust in Financial Services



Source: IFC Mobile Money Study 2011.

Figure 4.8 shows that most respondents saw convenience rather than cost as the major benefit of m-banking.

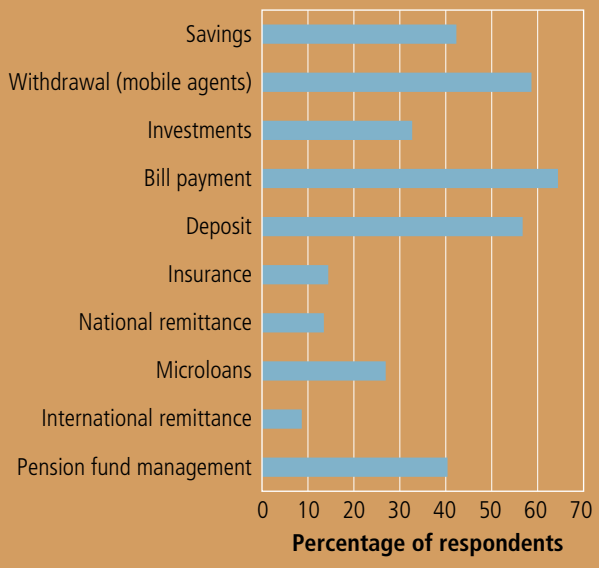
Figure 4.8 Perceived Mobile Money Benefits



Source: IFC Mobile Money Study 2011.

There was relatively little interest in either domestic or international remittances (figure 4.9). Key interest seemed to be in increased convenience for paying bills (i.e., directly on the phone and not having to line up at a correspondent bank) and in having more locations from which to withdraw and deposit cash. Sixty-two percent were willing to pay a small amount for both bill payment and cash withdrawal (e.g., 1–2 percent of the bill amount) versus 38 percent who believed these services should be free.

Figure 4.9 Interest in Using Specific Mobile Banking Services in the Future



Source: IFC Mobile Money Study 2011.

5 Business Models

Both MNOs and banks see the advantage of combining each other's strengths and established functional roles in mobile financial service provision. Most banks and operators are currently working out models of the partnerships, addressing who owns the customer and determining the details of how to share revenues. Nevertheless, m-money applications in Brazil are typically led by banks, and no mobile operator could develop services without a banking partner.

All major banks offer their customers m-banking services, consisting of account transfers (intra- and interbank), payments, account information, investment management, and loan requests. Most banks offer several m-banking technologies for the global system for mobile communications (GSM), including wireless application protocols 1 and 2 (WAP1 and WAP2), and 3G (e.g., smartphones). In 2008, 65 million transactions (0.3 percent) used mobile phones (Central Bank of Brazil 2009a, 2009b). Bradesco saw a 28 percent increase in m-banking from last year. Its focus is on increasing the convenience, ease of use, and security of m-banking because it feels m-banking would otherwise only be used in situations where other channels are not accessible. These types of m-banking services are primarily additional access and banking channels, rather than new business cases.

Existing Business Model: Oi Paggo

Oi Paggo has existed since 2007 and is 100 percent owned by the mobile operator Oi, one of the four major operators of Brazil, but the one with the smallest market share (20.6 percent). It has a strong subscriber base in the less affluent northeast of the country. Oi Paggo is basically a credit card business, with the actual credit card replaced by the phone. A mobile phone also serves as the POS device for merchants. Oi Paggo merchants also capture transactions through electronic standardized (multibrand) terminals, electronic commerce solutions, and regular POS devices. The credit card business is very attractive in Brazil because there is both a strong, unmet demand for credit—especially in the C-class—and fairly high credit spreads on monthly balances, from 5 to 15 percent per month, thus interest rates are profitable.

As shown in table 5.1, Oi Paggo had 75,000 merchants, although they ranged from inactive to high performers. In the long run, Oi Paggo planned to target smaller informal merchants for whom the traditional POS device, at a R$100 (US$57) monthly rental fee, is not economically viable. It has completed pilot studies with micromerchants, who require faster payment (e.g., after 7 days rather than the standard 30 days) and are also more difficult to reach and acquire.

Table 5.1 Oi Paggo Business Model

Element	Description
Business objective	▪ Achieve profitability ▪ Increase telecommunications business (e.g., phone service top-up increased by 30% among Oi Paggo users)
Main value proposition	To merchants: ▪ Acquirers typically charge 4–6% from merchants, a lot for "mom and pop shops" and Oi Paggo has a price advantage with 2.99% ▪ No POS rental fee, which is typically R$100 (US$57) with other acquirers To customers: ▪ Convenient way to pay phone bill and top-up ▪ Credit card functionality, convenience
Strategy	Create partnership with major bank ▪ Oi Paggo would have access to one of the two dominant card acquirers in the country, both owned by major banks ▪ Oi Paggo would be accepted by the acquirer's POS system and merchants, with more than 1 million POS ▪ Once partnered with a bank, Oi Paggo plans to offer additional services, such as P2P and prepaid e-wallets (as it has a cash-in and cash-out network through the correspondent banks of its bank partner)
Target market	▪ Male and females under age 35 ▪ Target the middle class (C-class), because it shows demand for credit (cards) and will pay interest; C-class also has lower penetration of Visa and MasterCard ▪ Demand is the same as for the credit card market, 7–8% of Oi subscribers, with a maximum close to 10%
Marketing strategy	▪ Cross-marketing through Oi ▪ Mobile marketing campaigns combined with aggressive telecommunications bonusing as a promotional currency
Revenue streams	▪ Main revenue (~70%) comes from the 15.99% monthly interest charged on outstanding balances ▪ Monthly flat usage fee from users of R$2.99 (US$1.70) if there has been activity during that month—activity includes an outstanding credit—represents 10% of revenue ▪ Merchants pay Oi Paggo 2.99% on all purchases made through Oi Paggo, representing 15–20% of revenue ▪ Currently not profitable
Costs	▪ Costs of acquiring a merchant are R$130 (US$74), including commercial/sales effort, subscriber identity module (SIM) card, training, technical set-up, and labor but not marketing material and signage ▪ 15–20 Oi Paggo staff look after merchants, roughly 1–2 persons per city; they visit merchants every few months, focusing on those who make the majority of transactions
Transactions	▪ Transaction numbers are confidential ▪ Typical split of transactions is two-thirds for top-up and one-third for other purchases ▪ Average top-ups are around R$10 (about US$6), and other purchases average R$63 (US$36)
Merchants	▪ 75,000 merchants, with various levels of activity
Users	250,000, broken down as follows: ▪ 100,000 who use Oi Paggo only to pay their phone bills ▪ 150,000 signed up as m-payment users; nearly 50% of whom had used the product in the prior three months
Pipeline	Now that Oi Paggo is partnered with a bank, it plans to launch a range of new services in 2011: ▪ P2P transfers ▪ Prepaid e-wallets—have cash-in and cash-out network (through correspondence network of partner bank) ▪ Limited or small credit (e.g., only for airtime top-up) ▪ Bill payments (e.g., utilities, electricity); people would enter a bar code into their mobile phone to authorize debit/credit
Model/partners	Bank-centric—the bank's incentive is as follows: ▪ Access to Oi subscribers ▪ Sell traditional credit cards to Oi subscribers ▪ Superiority of Oi Paggo to plastic cards because there is less opportunity for fraud and higher security ▪ Mobile is a good channel for banks to interact with clients

Source: IFC Mobile Money Study 2011.

Oi Paggo's 250,000 users were divided between 100,000 who simply use Oi Paggo to pay their phone bills, and 150,000 who are signed up as m-payment users. Oi Paggo's main revenue (about 70 percent) comes from monthly interest charged on outstanding balances.

As of 2010, Oi Paggo was not profitable. To reach economies of scale and to increase its acceptance as a payment instrument, it needed a bank partner.

Oi is currently in talks with three major banks to sell 50 percent of Oi Paggo and create a partnership (box 5.1). Through the new bank partner, Oi Paggo will have access to one of the two dominant card acquirers in the country, as those are owned by major banks. Part of the deal will be that Oi Paggo will be accepted by the acquirer's POS system and merchants, which has over 1 million POS devices. Once partnered with a bank, Oi Paggo plans to offer additional services, such as P2P and prepaid e-wallets (as it will have a cash-in and cash-out network through the correspondent banks of its bank partner).

In conclusion, either this will be a transformational year for Oi Paggo—if it secures a bank partner and becomes a bank-backed m-money operator—or Oi Paggo will be struggling to find an alternative strategy.

Banks

Banks in Brazil see the following potential advantages for partnering with mobile operators:

- Access to mobile subscribers, especially as a communication and sales channel with clients
- Promotion of traditional credit cards to mobile subscribers
- Introduction of alternative products like Oi Paggo's—mobile credit card[1]
- Access to the low-income unbanked market, because low-cost bank accounts through mobile channels can increase penetration.

Bradesco provides a service by which account holders can recharge their phones with airtime, using a user-friendly interactive voice response system. Currently, 1.5 million mobile subscribers from Claro and Oi use this service, with 260,000 recharges per month at an average recharge amount of R$22 (US$13). Bradesco charges the mobile operators a commission, but it is less than the approximately 15 percent distribution costs of mobile operators.

Box 5.1 Update on New MNO-Bank Partnership

Since the field study in April 2010, there were the following developments. Federally controlled Banco do Brasil and Brazil's leading card acquirer Cielo have signed deals with the country's largest telecommunications firm, Tele Norte Leste (Oi) "with the purpose of establishing a business partnership to issue co-branded credit cards and pre-paid cards," as well as working on increased mobile payment with Oi's client base. Banco do Brasil, which owns a controlling stake in Cielo jointly with the private sector bank Bradesco, had Cielo's equity holding arm, CieloPar, take a 50 percent stake in a new company called Paggo Soluçoes, with an Oi subsidiary Paggo Acquirer taking the other half.

Paggo Soluçoes is now conducting activities in connection with the capture, transmission, processing, and payment of business transactions with the m-payment technology originated or completed in cellular phone devices and accrediting current and new stores to its acquiring network of transactions originated in cell phone devices through the existing relationships of Cielo and Paggo Acquirer all over Brazil. The deal has been cleared by Brazil's antitrust regulators. Cielo plans to invest US$1.17 million into the joint venture and believes that no major additional investments are required, because the controlling companies already have the capability and infrastructure to operate this activity.

[1] A mobile credit card offers higher security and less opportunity for fraud than its plastic counterpart, especially for purchases made via phone or the Internet. Mobile technology eliminates the need to provide credit card details, which many consumers are understandably reluctant to do, and confirms purchases with a short message service (SMS) text message.

Another initiative is the Visa mobile pay service offered by Banco do Brasil. The Ourocard Visa cardholder must register only once at the Banco do Brasil Internet portal (bb.com.br). After that, when making a purchase—via fixed telephone, mobile phone, or in person—at a commercial establishment affiliated with the Visa mobile pay service, the customer may request payment by phone. The carrier must report only the mobile phone number and name of the issuing bank. Once payment is processed by Visa and the Banco do Brasil, the holder receives an text message to confirm the purchase.

Many other initiatives are being piloted, including use of NFC technology. Often, though, these are technology trials rather than business case pilots.

Mobile Operators: Vivo

Vivo is Brazil's largest mobile operator, with 60 million subscribers at the end of 2010 (42 million prepaid) and a 30 percent market share. Vivo envisions itself as having a financial transaction business (including insurance products) in addition to its communications and info-entertainment business. However, it is not trying to become a bank, a credit card company, an insurer, or an acquirer. Rather, it prefers to be the intermediary between the financial sector and its subscribers. It plans to complete subscriber research to identify needs and demands, and then discuss possible products with banks. It envisions either partnering with banks or contracting banks to offer services to its clients.

Vivo targets the low-income segment—banked and unbanked—and plans to create revenue by selling financial services and charging fees for usage and transactions.

Like other MNOs, Vivo is in talks with banks to offer m-banking services. Existing account holders would be able to receive their account statements, status, and alerts via mobile phone and later make P2P transfers and pay bills.

Insurance

Vivo is already offering insurance products such as mobile handset theft insurance (with the Spanish company Mapfre) and life insurance (with Santander). A three-month unemployment insurance and housing insurance plan was to be launched in 2010. Costs vary, but are typically small—e.g., R$4.99 (US$2.84) per month for insurance coverage of R$5,000 (about US$2,800) for accidental death, R$10,000 (about US$5,700) for permanent disability through accident. At the end of 2010, Vivo had sold 300,000 mobile handset theft insurance plans with Mapfre and 400,000 life insurance policies with Santander.

Insurance seems to complement the trend for credit consumer purchases, as first-time buyers of cars, houses, and smaller items insure their assets. These relatively small monthly payments are ideal for mobile phone payments. Furthermore, unemployment and life insurance can protect lower-income clients.

An obstacle facing Vivo is that it can only offer these insurance programs to postpaid clients (typically wealthier people, who are not actually the target market). Mobile operators get taxed on airtime; if they want to accept payment for insurance or other services from their prepaid clients, those clients can only do that through airtime top-up. At this time, the telecommunications regulatory body, Anatel, does not recognize nontelecommunications revenue from airtime top-up because it would result in double taxation of insurance payments (i.e., revenue as airtime and revenue as insurance). However, this regulatory problem is solvable.

A recently launched product may solve the issue: life insurance for personal accident offered as a combo top-up. Customers buy a regular top-up of R$12 (US$6.82) plus R$3 (US$1.71) for the insurance, for a total of R$15 (about US$8.50). Vivo transfers R$3 (US$1.71) to the insurance company, ACE, and the client receives a R$10,000 (about US$5,700) insurance coverage product (30 days coverage). Vivo invites customers to buy this combo every month. In this way,

Vivo does not pay a telecommunications tax, as this amount is not a top-up.

Credit Cards

Vivo also offers a credit card (MasterCard) jointly with a major Brazilian bank, Itau Unibanco, with access to statement information over the mobile phone. At the end of 2010, there were 500,000 Vivo Itau Unibanco credit card holders.

Mobile Payment/Transfer

A pilot is planned, involving Vivo, Itau Unibanco, and MasterCard Global, for mobile wallets and payment systems. Targeted are clients of Vivo, Itau Unibanco, and MasterCard, who will be asked to get a new SIM card for their mobile phones that includes MasterCard software and subscribe with Itau Unibanco to receive a special personal identification number (PIN). This program will allow P2P, payment to merchants, and bill payment.

Distribution

Although Vivo has an extensive distribution network for prepaid scratch cards (top-up cards) with more than 500,000 points of sale, most of these stores are managed by different dealers. It has 300 of its own stores and approximately 3,000 franchise partners.

Industry Association Approach

FEBRABAN, the main Brazilian banking association, believes that with the current approach (individual banks seeking partnerships with specific MNOs, individual credit card issuers, and acquirers), banks are able to find profitable niche markets or serve existing customers. However, they will not reach a critical mass to make a compelling business case.

FEBRABAN therefore has conducted studies on m-money market segments and has hired two consulting firms to work on a model that determines the following:

- To what extent and in which areas should banks, credit card companies (acquirer and issuer), and mobile operators collaborate to reach economies of scale and create a profitable mass market? What is the business model? What services will be profitable?
- In which areas should the players remain free to compete?
- What is required to address common standards, interoperability needs, and joint platforms?

It planned to present the findings to its board of directors in April 2010.

FEBRABAN has board approval for these studies, but as an industry body, it has no power over the adoption or implementation of its recommendations. FEBRABAN and stakeholders have successfully collaborated in the past on standardizing an electronic direct debit model, which is characterized by a tier of shared-use infrastructure and another tier of competitive service offerings. Although it took several years to reach a consensus and then several more years to implement, it is a successful precedent for an industrywide collaborative/competitive approach that creates economies of scale and grows the market.

6 Conclusion

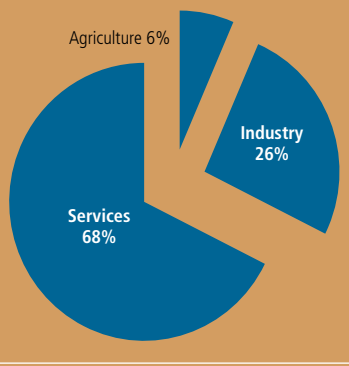
Of the four countries studied, Brazil is the farthest along the m-money demand curve (see *IFC Mobile Money Study 2011: Summary Report*, chapter 5) with the highest penetration of electronic payment cards. There is an opportunity for mass adoption of m-money *only if* the m-money product can integrate itself seamlessly into the financial service industry and infrastructure. This integration is evidenced by the m-money provider Oi Paggo, which provides a credit card service linked to the mobile phone.

There is considerable demand and opportunity for credit and microcredit, especially among the low-income population. However, only now that is it linked to a major bank does Oi Paggo's credit card and other m-money offerings have prospects for a large market. Oi Paggo's partnerships with a major bank, Banco do Brasil, and the credit card acquiring company, Cielo, which owns approximately 50 percent of Brazil's credit card POS infrastructure and has relationships with merchants (i.e., an acceptance network for m-payment), may provide good prospects for m-money and m-payment in Brazil.

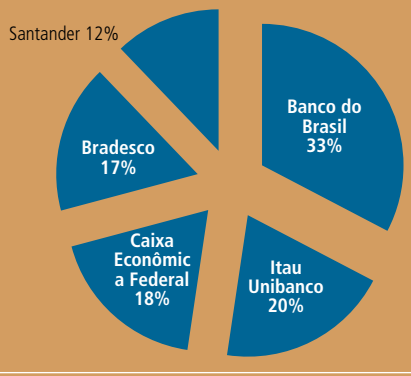
Appendix A
Fact Sheet and Demand Estimates

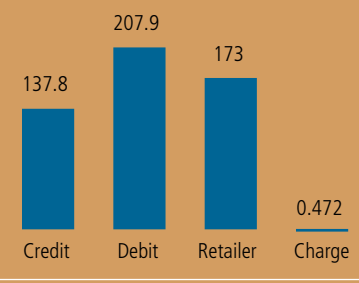
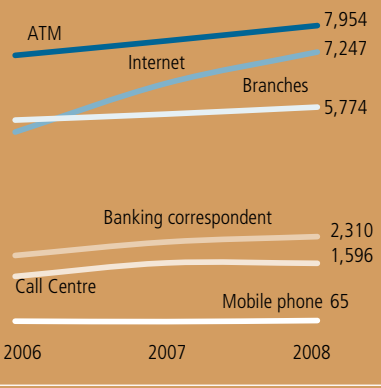
Table A.1 Fact Sheet

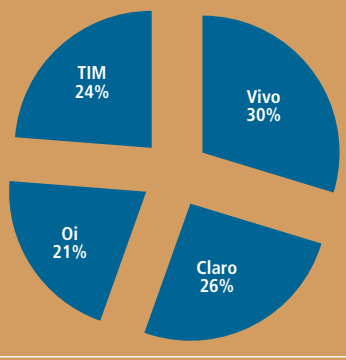
Country Profile		
Population	191.5 million[a]	**Sector shares of GDP**
Geographic area	8.51 million sq. km	
GDP	US$1.574 trillion[b]	
GDP per capita	US$10,456	
Gini index	55.0[c]	
Rural population	16%[d]	
Rural poor	9.4% (18 million)[e]	
Population below poverty line	26% (49.8 million) (calculated; 2008)	



Financial Profile		
Number of banks	130[f] (2006)	**Top five banks by deposits**
Total branches	19,100	
Total correspondent banking agents	108,000[g]; 150,000[h]	
Number of bank accounts	125.7 million accounts[i] (2008); 0.656 per capita	
Banking penetration	43% (2008)[j]	



Financial Profile (continued)		
Number of POS devices	3.18 million (2008);[k] 0.017 per capita	**Financial cards (millions)** 
Number of ATMs	158,414 (2008);[k] 827 per 1 million pop.	
Number of financial cards	519.2 million; per capita 2.71	
Credit card growth	53.5 million (2004) 137.8 million (2008); 26.7% avg. yearly growth 2004-08	
Remittance flow—inbound	US$5,089 million[l] (Japan, United States, Spain)	**Access channels to financial services (transactions in millions)** 
Remittance flow—outbound	US$1,191 million (Portugal, Spain, Lebanon)	
Number of MFIs	1,961[m]	
Number of MFI accounts	780,000	
Herfindahl-Hirschman Index (HHI)	2233[n]	

Mobile Profile		
Main mobile operators	4	**Mobile market share** 
Mobile coverage	90.6%[o]	
Number of mobile subscribers	134.43 million (calculated)	
Mobile penetration	95.9%[p]	
Internet user penetration	0.376 (72.028 million) (2008)[q]	
Broadband penetration	5.8%[r]	
Herfindahl-Hirschman Index (HHI)	2527	

Note: All data are for 2009 unless otherwise stated. — = not available.

a. CIA 2010.

b. International Monetary Fund, World Economic Outlook Database, April 2010; http://www.imf.org/external/pubs/ft/weo/2010/01/weodata/weorept.aspx?sy=2009&ey=2009&scsm=1&ssd=1&sort=country&ds=.&br=1&pr1.x=42&pr1.y=8&c=223&s=NGDP_R,NGDP_RPCH,NGDP,NGDPD,NGDP_D,NGDPRPC,NGDPPC,NGDPDPC,PPPGDP,PPPPC,PPPSH,PPPEX,PCPI,PCPIPCH,PCPIE,PCPIEPCH,LP,BCA,BCA_NGDPD&grp=0&a=#download.

c. United Nations Development Programme, Human Development Report Statistics 2009, http://hdrstats.undp.org/en/indicators/161.html.

d. Population Reference Bureau 2009.

e. IFAD 2010.

f. CGAP 2009.

g. CGAP 2010b.

h. FGV estimate. This figure is for active agents and does not reflect dormant registrations or very small agents going door to door selling financial services.

i. Accounts of commercial, savings, and universal banks and credit unions.

j. FAI 2009.

k. Central Bank of Brazil 2009a, 2009b.

l. GSM Association, 2010 Brazil Mobile Money Status, http://www.wirelessintelligence.com/mobile-money/.

m. Credit cooperatives and nonbanking financial institutions.

n. The HHI is calculated based on market share of deposits (Central Bank of Brazil 2009a, 2009b).

o. International Telecommunication Union, World Telecom ICT Indicators, http://www.itu.int/ITU-D/icteye/Indicators/Indicators.aspx.

p. Anatel's latest mobile subscriber figure: 183.7 million from May 2010.

q. World Bank, World Development Indicators 2008; ITU for Internet user penetration figure.

r. Cisco Systems 2009.

Table A.2 Demand Estimates

Socioeconomic data	
Population (millions)	191.5[a]
GDP per capita (US$)	10,456[b]
Gini index	55[c]
Financial data	
Bank accounts (million)	125.7[d]
Banking penetration (percent)	43.0[e]
Number of POS devices (million)	3,180,000[f]
POS devices (per million inhabitants)	16,606
Number of ATMs	170,240[g]
ATMs (per million inhabitants)	889
Payment cards (million)	519[d]
Payment cards (per million inhabitants)	2,711,227
Mobile data	
Mobile operators	4
Mobile penetration (percent)	70.2
Number of mobile subscribers (million)	134
Potential demand	
E-payments (per month)	Unknown
G2P (transactions per month)	16,666,667[h]
Payroll, informal sector (transactions per month)	48,081,050[i]
P2P (transactions per month)	Unknown
Public transport (trips per month)	1,421,900,000[j]
Unbanked (persons)	Unknown
Utility payments (per month)	164,311,579[k]

a. CIA 2010.

b. International Monetary Fund, World Economic Outlook Database, April 2010; http://www.imf.org/external/pubs/ft/weo/2010/01/weodata/weorept.aspx?sy=2009&ey=2009&scsm=1&ssd=1&sort=country&ds=.&br=1&pr1.x=42&pr1.y=8&c=223&s=NGDP_R,NGDP_RPCH,NGDP,NGDPD,NGDP_D,NGDPRPC,NGDPPC,NGDPDPC,PPPGDP,PPPPC,PPPSH,PPPEX,PCPI,PCPIPCH,PCPIE,PCPIEPCH,LP,BCA,BCA_NGDPD&grp=0&a=#download.

c. United Nations Development Programme, Human Development Report Statistics 2009, http://hdrstats.undp.org/en/indicators/161.html.

d. Central Bank of Brazil 2009a, 2009b.

e. GSM Association, 2010, Brazil Mobile Money Status, http://www.wirelessintelligence.com/mobile-money/.

f. Central Bank of Brazil 2009b.

g. CIAB FEBRABAN 2009.

h. 200 million Caixa Econômica Federal annual payments (Bolsa Familia plus others).

i. Total labor force: 95,210,00; with 49.5 percent in formal sector; 48,081,050 informal workers; assumes monthly payment frequency.

j. 16.8 billion public transport (bus and rail) trips and 262.8 million taxi trips per year (180,000 taxis, assuming average 4 trips per taxi every day per year) (ANPT 2009).

k. 33,200,000 postpaid mobile subscribers (calculated from CIA 2010 and Anatel website); 41,497,000 fixed-line subscribers (ITU 2009); 46,867,105 households paying electricity bills (IEA 2008); 38,803,947 households having water connections (WHO-UNICEF JMP 2008), of which 34,147,473 pay bills (calculated from World Bank 2003); 8,600,000 pay TV subscription (Anatel).

Appendix B
Persons Interviewed

Cassio Marx Rabello Da Costa, Especialista, ABDI (Brazilian Agency for Industrial Development)

Mardilson Fernandes Queiroz, Senior Advisor, Department of Banking Operations and Payment Systems, Banco Central Do Brasil (Brasilia office)

Elvira Ventura, Assessora Plena, Banco Central Do Brasil (Rio de Janeiro office)

Delio Galvao, Analyst, Banco Central Do Brasil (Rio de Janeiro office)

Natacha Litvinov, Superintendente Canais Electronicos, Centro Tecnico Operacional, Banco Itau S.A.

Guilherme Castanho Franco Montoro, Gerente, Area de Inclusao Social, BNDES

Marcos Bader, Head of Alternative Channels, Banco Bradesco S.A

Raul Francisco Moreira, Executive Manager, and Board Member of ABECS (Brazilian Credit Card Association), Banco Do Brasil

Roberto Barros Barreto, Spuerintendente Nacional, Caixa Econômica Federal

Mauro Henrique Macedo Pessoa, Gerente Nacional, Caixa Econômica Federal

Jose Antonio de Sousa, Gerente Nacional, Caixa Econômica Federal

Rodrigo Duarte de Castro Souza, Gerente de Padroes e Planejamento, Caixa Econômica Federal

Fabricio Costa, CGES

Francisco Parreira, CGES

Klaus Gottsfritz, Products and Markets, Cielo

Rogerio Fernandes Signorini, Product and Market Development, Cielo

Joaquim Kiyoshi Kavakama, Chief Executive Officer, Camara Interbancaria De Pagamentos

John Alessandro Dias, Assessoria Tecnica, FEBRABAN

Walter Tadeu Pinto de Faria, Assessoria Tecnica, FEBRABAN

Lauro Gonzalez and Eduardo Diniz, Coordenador/ Professors, FGV

Marcello Kieleng Veronese, Channels Executive Superintendent, Latin America, HSBC

Roberto Rittes de Oliveira Silva, Diretor Geral, Oi Paggo

Eduardo Neubern, Gerente de Rentabilizacao, Oi Paggo

Chrstianna Pessoa, Gerente de Vendas, Oi Paggo

Ronaldo Varela, Executive Director, Marketing and Business, Getnet Tecnologia em Captura e Processamento de Transações

Anderson Jorge Lopes Brandao, Director de Beneficios, Secretia Nacional de Renda de Cidadania, Ministerio do Desenvolvimento Social e Combate a Fome

Walter Ribeiro da Silva, M-projects

Edmar Prado Lopes, Treasurer, Net Servicos

Fabio Luciano Aires, Net Servicos

Marcio Oliveira da Silveira, Managing Director, Qspan Technologies Limited

Taniara Castro, Unidade de Acesso a Mercados e Servicos Financeiros, Sebrae RJ

Juliana Estrella, Small Enterprise Coordinator, Sebrae RJ

Alberto Blois, Director, Sindicato das Empresas de Informatica

Luiz Starling, Regional Product Manager, SmartTrust

Daniel Haiidamus Bettamio, Tribanco

Cesar Moreira, Tribanco

Marcelo Sarralha, Diretor de Produtos, Visa

Percival Jatoba, Diretor Executivo de Produtos, Visa

Mauricio Romao, Diretor de Prod. e Servs. Financeiros, Vivo

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November 2011