“Brazil eHealth – Overview, Trends & Opportunities”

Consulate General of the Kingdom of the Netherlands

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Objective

The document's target is to present a brief description about the realities and Brazilian opportunities in the eHealth sector.

The work isn’t a detailed report about the regulatory and historical aspects of healthcare in Brazil, but just wants to be a driver to understand the opportunities that the country is opening in Digital Healthcare.

The scope is also focused on specific verticals involving the emerging technologies that are being incorporated by many countries around the world.

Information Sources

The data presented here are extracted from several reliable sources which are analyzed, updated and contextualized by EMI.

The projections and forecasts are based on more than 20 years of experience in the national health market, with field surveys and interviews with decision makers.
Social & Economic Indicators

General Information

GDP USD2346.118bn (World ranking 7, World Bank 2014)
Population 202.03mn (World ranking 5, World Bank 2014)
Form of state Federal Republic
Head of government Michel TEMER (Acting President since May 2016)
Next elections 2018, presidential and legislative

Strengths

- Overall size of the economy
- Large domestic market and expanding middle class
- Diversified economic base (minerals, agriculture, manufacturing sector)
- Robust foreign direct investment, high level of foreign exchange reserves, moderate external debt
- Established political system with effective democratic transfers of power

Weaknesses

- Insufficient domestic investment and infrastructure bottlenecks
- Vulnerable to global commodity demand and prices
- Lack of qualified workforce and high production costs
- High taxation and bureaucracy undermine competitiveness
- Social tensions, persistent insecurity, allegations of corruption and inequalities of income distribution

Key economic forecasts

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<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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<tr>
<td>GDP growth (% change)</td>
<td>0.1</td>
<td>-3.9</td>
<td>-3.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Inflation (% yearly average)</td>
<td>6.3</td>
<td>9.0</td>
<td>8.7</td>
<td>5.8</td>
</tr>
<tr>
<td>Fiscal balance* (% of GDP)</td>
<td>-6.0</td>
<td>-10.3</td>
<td>-10.0</td>
<td>-9.0</td>
</tr>
<tr>
<td>Public debt* (% of GDP)</td>
<td>63.3</td>
<td>73.7</td>
<td>88.7</td>
<td>95.7</td>
</tr>
<tr>
<td>Current account (% of GDP)</td>
<td>-4.3</td>
<td>-3.3</td>
<td>-1.2</td>
<td>-1.8</td>
</tr>
<tr>
<td>External debt (% of GDP)</td>
<td>14.6</td>
<td>19.8</td>
<td>20.6</td>
<td>21.4</td>
</tr>
</tbody>
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*Includes Local Government; Nonfinancial Public Corporation; Social Security Funds; State Government

GDP growth (%)

Sources: National sources, IHS, Euler Hermes

Foreign investment inflows (USD bn, over 12 months)

Portfolio net inflows
FDI net inflows
Current Economic Scenario

Brief analysis of the World Bank Group (October, 2016)

- Brazil’s economic and social progress between 2003 and 2014 lifted 29 million people out of poverty and inequality dropped significantly (the Gini coefficient fell by 6.6 percentage points in the same period, from 58.1 down to 51.5). The income level of the poorest 40% of the population rose, on average, 7.1% (in real terms) between 2003 and 2014, compared to a 4.4% income growth for the population as a whole. However, the rate of reduction of poverty and inequality appears to have stagnated since 2015. Brazil is currently going through a deep recession.

- The country's growth rate has decelerated steadily since the beginning of this decade, from an average annual growth of 4.5% between 2006 and 2010 to 2.1% between 2011 and 2014. GDP contracted by 3.8% in 2015, and is expected to fall at least 3% more in 2016. The economic crisis, as a result of the fall in commodity prices and an inability to make the necessary policy adjustments, - coupled with the political crisis faced by the country - has contributed to undermining the confidence of consumers and investors.

- The realignment of regulated prices combined with the pass-through of exchange rate depreciation have caused an inflation peak in 2015 (with an inflation rate of 10.7% in December), exceeding the upper limit of the government’s target band (4.5 ± 2%), despite a tight monetary policy and high real interest rates. The inflation rate of administered prices has been decelerating and will contribute to the moderate slowdown expected in 2016. Overall inflation is still expected to end the year at over 7%, above the target ceiling.

- Following the impeachment of President Dilma Rousseff on August 31st (2016), former Vice President Michel Temer took office as the new President of Brazil. He announced that his government would pursue several fiscal adjustment measures and a reform agenda to reestablish confidence and to restore a favorable investment environment. However, implementation of the reform program has proven difficult and faces opposition in Congress.

- Fiscal adjustment is undermined by budget rigidities and a difficult political environment. Less than 15% of expenditure in Brazil is discretionary. Most public spending is rigidly determined (by rules in the Constitution or other legislation) and cannot legally be reduced. Budget rigidities and pension liabilities have imposed significant burdens on subnational governments, some of which have had to delay payments and may face the risk of insolvency. The crisis has led to significant adjustments in the balance of payments current account.

- By July 2016, the current account deficit had dropped to 1.6% of GDP - in comparison with 4.3% in 2014 – mainly in response to the contraction of the GDP (as well as a moderate devaluation in the real exchange rate). Foreign direct investment accounted for 4.2% of the GDP 2015, thus funding 132% of the current account deficit. Brazil had an ample level of reserves of US$ 358 billion - or 18 months of imports - at the end of 2015.

- Brazil’s medium-term outlook will depend on the success of the current adjustments and the enactment of growth-enhancing reforms. Raising productivity and competitiveness is the main challenge for the country to achieve higher growth in the medium-term. With the recession of growth drivers over the past decade — credit-fueled consumption, labor expansion and the commodity boom — growth will need to be based on higher investment and productivity gains. Despite the achievements in poverty reduction over the last decade, inequality remains at high levels.

- After achieving universal coverage in primary education, Brazil is now struggling to improve the quality and outcomes of the system, especially at the lower and upper secondary levels. Great progress has also been achieved in reducing deforestation in the rainforest and other sensitive biomes. However, the country still faces major development challenges - especially in finding ways to combine the benefits of agricultural growth, environmental protection and sustainable development.
Brazil Healthcare ICT

- Brazil’s Health IT sector prospects have taken a discernible hit recently, as the Brazilian economy has fallen into recession.
- The long-term potential IT companies is positive: the sector remains in an early development stage;
- There is little domestic competition;
- ICT infrastructure is good; and regulations are minimal. There are still important unknowns, as the Brazilian government has not signaled near-term plans to introduce a Health IT deployment strategy;
- There are significant regional differences in healthcare provision, and an increasing percentage of healthcare services are being offered through the public sector at a time of very tight budget resources. Therefore, it is currently difficult to know what Brazilian government priorities will be for Health IT, but the large potential market for products and services make Brazil a long-term strong prospect for international companies.
- Brazil have a mid-level ranking in the majority comparative internationals reports, with relatively modest scores on most metrics, combined with low scores on ICT market development and per capita health expenditures.
- Brazil, however, has the world’s sixth largest GDP, the fourth highest population among the countries ranked and a fairly high growth rate in the over-60 population over the next 15 years, indicating that a huge potential market exists for Health IT products and services.
- The current Health IT market size is estimated between $500 million and $1 billion, with low levels of dedicated investment and minimal regulations in place, further illustrating the market opportunities available.
- Healthcare spending as a percentage of GDP is expected to remain around 9.6% over the coming years, even with recessionary pressures in place for the short-term. Brazil has one of the world’s highest GDP figures, so a high level of healthcare spending reflects strong long-term opportunities for Health IT investment.
- The recession has had a severe impact on Brazilian manufacturers, mainly in medical device production and exports (2015). The difficult economic conditions may result in opportunities for foreign suppliers and Health IT companies with innovative technologies to take advantage of the situation and establish or expand upon their current position in the Brazilian market.
- Brazil’s private healthcare market, although smaller than the public sector, will also be impacted by the recession. In local currency terms, the private market is expected to grow 7% (from 292 billion to 321 billion Brazilian reals) but is expected to drop 6.2% in U.S. dollars (from $87.5 billion to $82.1 billion).
In local currency terms, the future growth rate of the segment is expected to slow from 10.1% (from 2010 to 2015) to 7.6% (from 2016 to 2020).

Even with the expected decline in private healthcare participation due to the recession and increasing unemployment, strategic investments by foreign firms can be much more interesting during this turbulent period. The demand for health services continues to grow and the national supply decreases: scenario presents a strong pressure for innovation, emerging technologies and the necessity of the country to insert more in the global supply chains (GSCs).

Major investors in the telecommunications market recognize the Health IT potential in Brazil, particularly for TeleHealth. For instance, Telefónica Digital, the digital development arm of regional company Telefónica, acquired Brazilian chronic care management companyAxismed in February 2013. The acquisition allowedTelefónica’s Vivo unit to provide Health Monitoring services that also have Outpatient Care and Self Care applications to 180,000 Axismed patients by integratingAxismed into Vivo’s infrastructure to contact and monitor patients using mobile apps, SMS and video streams to cover biometric data around glucose levels and blood pressure. The development ofAxismed’s service offering will see Telefónica Digital enable the transmission of biometric data through connected devices in patients’ homes.

Recent research by PwC suggested that the health app market in Brazil would reach $46.6 million by 2015, while the GSMA trade association reported that mobile health projects would benefit 45.7 million Brazilians and save the healthcare market $14.1 billion in care costs.

Legislative changes allowing increased foreign investment into Brazil’s health system will aid the country’s pharmaceuticals and healthcare market development as Brazil’s economy becomes more open to external funding.

In January 2015, the Brazilian government began enforcing the new Brazilian Health Sector Law, known formally as Brazilian Federal Law 13,097/2015. The Brazilian Health Sector Law upheld an amendment to the Brazilian Federal Law 8,080/1990, which will “…allow for foreign investment, direct or indirect, including the acquisition of control, in activities related to the health sector, which includes investments in hospitals, clinics, laboratories, etc.” The amendment aims to attract new foreign investment within the healthcare sector.

As one of the world’s largest emerging markets, encouraging foreign investment could further improve Brazil as an attractive and profitable destination over the long-term. Moreover, new financial investment will significantly contribute to the country’s sector developments aimed at improving infrastructure and service provision by boosting the flow of capital through the market.
In 2014, the Brazilian public health market was valued at $103 billion, accounting for 48% of total health expenditure. By 2024, this figure is estimated to rise to $233 billion, accounting for 54% of total market spending and equating to a compound annual growth rate (CAGR) of 8.5% in U.S. dollar terms. Continued engagement and outreach to Brazilian government officials to meet their Health IT needs should remain a critical part of a foreign company’s long-term strategy in Brazil because of the large size of the public sector, even if negotiation on per-unit amounts might currently yield small profit margins.

Once the short-term challenges abate, Brazilian public sector officials will likely augment purchases of Health IT products and services to meet their long-term needs. This also means that the private sector will account for a sizable amount of medical spending in Brazil, which according to World Bank data requires nearly 60% of out-of-pocket spending by individuals.

Two government departments will play leading roles in the development of Health IT in Brazil. **DataSUS**, in the Ministry of Health, is the department of informatics for the **Unified Health System (SUS)** that supplies information systems and informatics support to all divisions of SUS, including planning, operation, coordination, and consulting services to maintain the national databank. The **Telesaude Brasil Redes** is a national program designed to improve SUS’s quality of healthcare assistance and basic care, integrating education and services to promote teleassistance and tele-education.

BMI estimates that, over the next 10 years, per capita public health spending will grow from $821 to $1,403. It is worth noting that a 2014 Datafolha poll indicated that 92% of Brazilians use the public health system, making the 2015 proposed budget cuts far-reaching among the Brazilian population.

The unemployment rate has jumped sharply recently (7.6% in January 2016 from 6.9% in December 2015). That is, more citizens have moved into the public healthcare system since they have lost their jobs, putting significant pressure on the public system at a time of reduced spending, likely leading to some cost containment measures.

According to the Institute of Supplementary Health Studies (IESS), the costs of Brazil’s private health plans increased by 12.2% in 2015, which is the biggest rise recorded. Between June 2014 and June 2015, the cost of healthcare services increased by 17.1%, mainly due to increasing hospital expenditures.

In addition, the health insurance market lost more than 1 million users in 2015/2016 due to the country’s growing unemployment rate. Although the rate and level of Health IT expenditures has likely declined in the short-term, this may be an opportune time for foreign companies to promote the advantages of digital health to Brazilian officials so that they can more efficiently spend their future public system funding.
Another important point is: almost 92% of Brazilians had access to 3G mobile connections in mid-2015, particularly in the south and south-east regions (where coverage is close to 100%), but availability in the central-west, north and north-east regions of Brazil remains below 85%, similar to 2014. In addition, Brazil has had an extremely slow rollout of 4G LTE (Long Term Evolution) services, reaching only 7.7 million 4G LTE mobile connections as of January 2015, according to figures from the country’s telecoms regulator Agência Nacional de Telecomunicações (Anatel).

As of January 2015, 147 municipalities, including the 23 state capitals and the Federal District, have 4G LTE, covering 41.8% of the country’s population. Compared to other countries, as of January 2015, Brazil 4G has relatively low capacity and is not of high quality, and due to the focus on providing service to specific municipalities, coverage can be rather intermittent outside of the upgraded areas.

As of September 2015, Brazil had 275 million active mobile telephone lines, covering 91.1% of the Brazilian population, according to Sinditelebrasil. 56.3% of households claimed that mobile phones were their only form of telecommunication. Until there is wider availability of 4G service, less advanced mobile health and TeleHealth technologies would seem to be more appropriate for the Brazilian market.

There are also some limitations on the availability of IT professionals to help implement a Health IT system in Brazil. It is estimated that Brazil’s IT workforce totals around 250,000, lower both nominally and as a percentage of overall population than other Latin American countries, such as Mexico. Not all of these professionals are working in the health sector, which may also constrain the expansion of Health IT in Brazil.

In 2015, Brazil had 1.95 doctors per 1,000 habitants. The precarious state of Brazil’s public health system is boosting the use of private health care and employer-subsidized private health insurance among those who can afford it. Private health care accounted for 51.8% of total health care spending in Brazil in 2013, according to WHO data. There are 6,630 hospitals in Brazil, with 491,600 beds. Of this amount, 70% are private/non for profit hospitals. Approximately 55% of healthcare expenditures are performed by the private sector, while the other 45% are under the public budget.

The ICT in Health (survey: CETIC – 2014) show that most facilities that have used the Internet in the last 12 months have some sort of electronic record for medical information (70%). In 48% of the facilities, records are partially on paper and partially electronic. Totally electronic records were present at 22% of the facilities, with a 33% proportion for private facilities. On the other hand, 30% of the facilities keep their records totally on paper and, in this case, the proportion of public facilities is 51%.
eHealth - Opportunities in Brazil

Electronic Health Records (EHR)

Similar Technologies: electronic medical record (EMR); clinical health records (CHR); personal health records (PHR), clinical system data, decision support system, e-Prescribing, etc.

Scenarios:

- The National Health Card (CNS) was proposed to answer a historical demand of healthcare service in Brazil. Since 1996 it was foreseen by normative tools of the Brazilian health system, having as its basic objective the unique identification of SUS users and monitoring of the series of services provided by the health system, wherever they may happen, preserving the SUS’s principles of universality, integrality, equity and decentralization, as well as the right to privacy and autonomy of citizens. A pilot project for the implementation of the CNS started in the end of the 90s with the initial goal to reach 44 municipalities and 13 million people, but, in response to pressure from political demands, it was expanded to the entire country. Due to other reasons, the project was terminated in 2002, but it started a process of registration that produced an immense user database — unfortunately, with quality and duplication issues that are now being corrected.

- With reliable identification of users and integration of SUS systems, it becomes possible to design an Electronic Health Record (EHR) for every citizen, a repository of individual records of services carried out and clinical records, and other important information to better care for citizens’ health and their well-being, monitoring records throughout their lives from the moment of birth. Thus, designing a user record with reliable information is a basic condition to organize eHealth in the country. Currently, the Citizen’s Health Portal retains individualized patient care summaries for all SUS users that appear in the SIA and SIH inpatient and outpatient records. Several computerized systems provide support for basic care and medium and high-complexity care used in UBS, specialized clinics and hospitals. Notably, the e-SUS AB and e-SUS Hospital, offered by the Ministry of Health, generate electronic medical records (EMR) with clinical care information.

- One principle that could be adopted is to design a national registry that has a subgroup of EMR information that are important (immunization, allergies, etc.) or significant for future treatments or even to the continuity of a treatment in different places. This way, the national database would have only a summary of information that effectively provided better care for citizens throughout their lives, regardless of place. Typically, patient electronic records have demographic data (for identification purposes).

- In November, 2016 the Ministry of Health and the Ministry of Science, Technology signed a cooperation agreement to stimulate the development of studies and new technological solutions in the healthcare area. The objective is to increase the control through of information systems, increasing the efficiency and quality of the care provided by SUS. The cooperation will reinforce the goal of computerization of national healthcare, such as the Electronic Citizen’s Record (PEC), which has a deadline for implementation in all basic health units in the country until December 10.

- The digitization of the electronic medical record (e-SUS) should be done by the municipalities until December, 2016 for the public services (SUS). According to the Ministry of Health the system is already installed in 1,920 cities in the country. A new version of the electronic medical record was released in October / 2016 by the federal government. The model allows all public health services (municipal) to track the history, data and outcome of patient exams.
EMI Comments:

- Although the deadlines for implementation are not consistent (there will be no public funding for this operation) never the country’s Ministry of Health did this imposition. More: the Federal Government also informed that the payment of the pass-through of prefectures (Floor of the Basic Attention) - equivalent to R $ 10 billion per year - will be conditioned to the implantation of the electronic medical record.

- This set of government decisions shows a determination (something unheard of until then) to accelerate the digitalization of Health in the country. Although only part of these “promises” is fulfilled, this is a new position of the Brazilian State in eHealth direction.

- The use of totally electronic records is more prevalent at facilities for diagnosis and therapy services (51%) and occurs less frequently at inpatient facilities, with little difference as to size: 10% of those with up to 50 beds and 9% of those with more than 50 beds. It is worth noting that the adoption of solutions for totally electronic records represents a bigger challenge for inpatient healthcare facilities, in the light of the complexity of clinical and administrative information that have to be stored.

- The national hospital scenario (low EHR utilization and low offer of local suppliers) shows that there will be a great expansion in EHR area during the next decade. Most of the solutions will come from foreign companies that have emerging technologies more adherent to the Brazil’s demands (cloud, big data, cognitive engineering, etc.).
TeleHealth & ConnectedCare

Similar Technologies: mHealth, eVisit (teleconsultation), vital signs monitoring, care navigation, assisted healthcare environment, etc.

**Scenarios:**

- **Mobile Phones** have become the Most-used Devices for Accessing the Internet. Among Internet users, 89% accessed on mobile phones, while 65% used computers (desktop, portable or tablet). In the previous edition, it was 80% on computers and 76% on mobile phones. It is interesting to note that mobile phones have become the only access devices for a considerable proportion of the connected population (35% in 2015 and 19% in 2014). This reality creates significant challenges for the development of the digital skills required for the new digital economy.

- **Increasing Importance of Wi-Fi Access.** Wi-Fi connections were found in 79% of Brazilian households with Internet access, which represents an increase of 13 percentage points in relation to the 2014 edition. In addition, 56% of users said they had used the Internet in someone else’s home (friend, neighbor or family member), making this the second most popular access location.

- **Proportion of Electronic Government Service Users.** For the population of Internet users aged 16 or older, the ICT Households survey also investigates the use of e-government services in seven strategic areas, such as health, education, taxes and obtaining documents. In 2015, the proportion of individuals who sought information or services in at least one of these areas was 59%, which represents an increase of nine percentage points over the previous year.

- **Gov. IT Department** - Most federal (97%) and state (83%) government organizations had areas or departments responsible for IT management. While 79% of federal organizations had more than 20 employees in their IT departments, only 22% of state organizations had this number. Among the municipalities, less than half local governments (41%) had IT sectors or departments. Only 29% of local governments in the Northeast region and 25% of municipalities with up to 10,000 inhabitants reported having IT sectors. A reduced percentage of government organizations provided resources via mobile devices. Half of federal and 42% of state government organizations provided website versions for mobile devices. Applications created by government organizations were mentioned by 33% of federal and 20% of state organizations.
Most of the Brazilian government organizations were present on social networking websites and frequently updated their profiles and accounts. Among federal and state government organizations, 76% had their own profiles or accounts on social networking websites, and 86% reported they updated or posted every day or at least once a week. Regarding local governments, 66% were present on the Internet through social networking websites, and 84% updated or posted every day or at least once a week.

Forms of Online Participation - In the 12 months prior to the survey, 35% of federal and 15% of state organizations conducted public consultations on the Internet; polls were adopted by 26% of federal and 17% of state organizations. While discussion forums or communities were mentioned by 25% of federal and 13% of state organizations, only 10% of federal and 6% of state organizations reported conducting online voting. The most reported form of participation via the Internet by local governments was polls (18%), followed by online public consultations (11%), discussion forums or communities (10%) and online voting (8%).

ICT Providers - In 2014, 2,138 enterprises were identified as operating in this market in Brazil. Of those ISP, 68% were headquartered in the South and Southeast. Only 5% of the providers had their headquarters in the North. The Southeast, despite having the largest number of active ISP, was not the region with the highest density of providers: There were 1.08 ISP for every 100,000 inhabitants. Considering population sizes, the highest densities are found in the South (2.29) and Center-West (2.10); the lowest result was in the Northeast (0.82). Most ISP offered their services to the private (90%) and household (88%) markets. The enterprises operated on a smaller scale in the public market: 63% worked with city governments, 31% with state governments and 21% with the federal government.

In 2011, 89% of the ISP enterprises offered speeds of up to 512 Kbps. In 2014, there were changes in the speed profiles. Although 89% of the providers offered access speeds from 128 Kbps to 1 Mbps, 94% also offered speeds from 1 Mbps to 10 Mbps, and 42% from 10 Mbps to 20 Mbps. Only around 10% offered speeds higher than 100 Mbps, where the proportion was higher among those with 250 or more employed persons.
**TeleHealth & Telemedicine** – The most important national project is **Telemedicine University Network (Rute)**, coordinated by the National Education and Research Network (RNP), integrated into the **Brazilian Telehealth Program** (Programa Telessaúde Brasil Redes). With the results achieved, the initiative is considered one of the biggest in the world: currently, the network comprises 150 university and teaching hospitals and includes 88 telemedicine and TeleHealth centers, inaugurated and in operation, located in all the 27 Brazilian states.

- 9 out 10 people connected to internet in Latin America have a Smartphone, being that the smartphone is the media that the Brazilian interacts for more time during the week: 11.8 hours.

- The current state of health care service in Brazil’s public sector is driving the use of private care by wealthier citizens. In 2014, private health insurance programs covered 50.8 million people — a quarter of the population — making Brazil the world’s second-largest insurance market by population, after the U.S.

- Brazil ranks 30th in Global Connectivity Index 2016 (score 39 - the same as last year). The country has a National Plan and Broadband (PNBL) since 2011. Despite the economic crisis the PNBL is being revised in 2016. The percentage of municipalities with fiber accesses in Brazil is 60%, should be expanded to about 75%. To ensure this growth, the Government announced in October 2016 investments of approximately US$ 9 billion.

- Within the TeleHealth ecosystem, which involves solutions that revolve around connectivity, a great number of health assistance services (local and global) are emerging in Brazil: (1) second diagnosis, (2) “uber doctor”, (3) vital signs monitoring, etc.
The first specific “legislation” about TeleHealth was in 2002. Resolution No 1643 of the Federal Council of Medicine (Conselho Federal de Medicina) made reference to the Declaration of Tel Aviv but fell short in terms of explicitly allowing the doctor–patient relationship through technology. This Brazilian legislation allowed telehealth only when doctors are presented at both ends.

The figure below shows the differences between US and Brazilian legislation in TeleHealth (or applied telemedicine).

In July 2016 the Technical Chamber of Telemedicine (Camara Técnica e Telemedicina) of the Federal Medical Council (Conselho Federal de Medicina) opened the work to study the recasting of Resolution 1643/2002, which prohibits medical consultation between doctors and patients.
EMI Comments:

✓ Despite the country's economic woes, no area in eHealth should grow more in Brazil than the TeleHealth sector.

✓ The pressure on CFM and the Ministry of Health is raising awareness in the medical community. The Teleconsultation (or eVisit, etc.) is being paved and will be the most notable revolution in public and private healthcare systems. Dozens of companies and doctors are already practicing experimentally, and several videoconference companies are coming to support with technological infrastructure. Telecom operators, Smartphones and App suppliers, cloud's providers and others corporate vectors are rushing to take up space in Latin America's largest healthcare market.

✓ Likewise, Venture Capital Funds are energizing their contacts with eHealth’s players to invest in the TeleHealth area. Over 30% of all VC Funds in US are focused on Connected Care services. It will not be different in Brazil, with a similar territorial and population dimension.

✓ Telemedicine and home care practices are expected to grow due to prioritization by the government of telecom and health sectors. Focus on democratization of access, expansion of supply and quality improvement of healthcare services (40% of Brazilians suffer from non-communicable chronic diseases, which accounts for over 70% of causes of death).

✓ Remote monitoring of the patient's vital signs (whose records are continuously sent to the doctor for analysis, interpretation and warning), finding great opportunities in Brazil. The costs of hospitalization and the increasing difficulty of finding space on doctor’s agenda, expands remotelization solutions (remote patient management). In a decade more than 10% of the population will be receiving health attention in digital format.

✓ As the country has few local providers of healthcare distance services will be increasing the number of foreign players arriving in Brazil. Most of them will be coming through local alliances (joint ventures, partnerships, business representatives, etc). These agreements will be increasingly fermented by the VC Funds.

✓ Dozens of services are embedded in national healthcare Systems (public and private), such as: Telediagnostics, Teleradiology, Telehomecare, Teledermatology, etc., with real companies already operating in the country.
Medical Devices & Nanosensors (IoT)

Similar Technologies: medical & dental equipment, nanodevices, robots, sensors, wearables, biosensors, prosthesis, implants, rapid tests, etc.

Scenarios:

- Brazil is the largest medical equipment market in South America and should continue to expand through the next years. The country is both a major medical equipment producer and importer.

- Medical devices in Brazil are regulated by the Agência Nacional de Vigilância Sanitária (ANVISA). Brazil’s base regulations and medical device classification schemes are similar to those found in the European MDD 93/42/EEC.

- The Brazilian Medical Equipment and Devices Market is comprised of medical devices and equipment, in vitro diagnostics and e-health solutions. In 2013, private and public healthcare expenses in Brazil were US$ 291.3 billion, which roughly corresponded to 9.6% of the GDP. Of this amount, US$ 10.6 billion were related to the acquisition of medical equipment and devices.

- In 2015, imports of medical products and devices were US$ 5.1 billion, a retraction of 13.7% from the previous year. As exceptions, dental products presented increase of 10.6% in imports and imaging diagnostics rose 32.4%.

- In general, the segmentation of the market for medical equipment and devices is: Reagents for In Vitro Diagnostic 20%; Materials and Consumables 19%; Prosthesis, Implants and Parts 15%; Lab equipment 14%; Imaging equipment and consumable 8%; Dental Equipment 3%; Furniture 2%; Other 19%.

- There are nearly 4,000 manufacturers of medical products (5% in medical devices sector) and 10,400 distributors. Some of the largest multinational companies established manufacturing facilities in Brazil in order to reduce costs and be more competitive with the public system. Foreign companies can participate in partnership programs for technology transfer with local manufacturers for development and production of medical products. Some of those programs grant at least 30% of market share for private companies for a period of five years with the government purchase.

- Two drivers will change the healthcare landscape in Brazil over the coming 5 years: (1) the determination of the government to improve healthcare infrastructure and (2) the growing middle class. These moves will make the health market grow by 10 to 12% over the next 5 years. The national health market is demander-buyer, with gigantic technological deficiencies, mainly in medical devices and equipment.

- Barriers to companies in the Medical Devices industry continue to be: (1) ANVISA bureaucracy (National Agency for Sanitary Vigilance Agency), which regulates and controls the sector. Product registration and certification have been declining but are still high compared to other countries; (2) technological gap of national companies that have difficulty to introducing innovations; (3) difficulties in obtaining funding for new products.
EMI Comments:

✓ Although the major international companies hold the largest share of the global market, over 80% of the industry consists of small and medium companies which generally employ less than 50 people (global revenues of US$ 350 billion in 2014). Wide range of products on the market: 90 categories with 10,000 product types and 500,000 items.

✓ The Medical Devices industry (MedTech) in Brazil consists of 14,482 companies. Of these, 4,032 are manufacturers and 10,450 are engaged in marketing and distribution of MedTech products. The State of São Paulo is home to 32% of the companies (4,639). The industry generates 225,000 indirect jobs in 20,100 companies dedicated to the diagnostic and therapeutic services industry. The sector also contributes to improving the quality of care provided by 1.1 million health professionals in 8,900 hospital establishments.

✓ The size of the market (apparent consumption) was US$ 10.6 billion in 2013. Total spending in Brazil on public and private healthcare was US$ 291.3 billion in 2013. MedTech accounted for 3.7% of total spending. The industry imported 56% of the market. The growth of the market or apparent consumption was 6.4% in 2013 compared to 2012 and 2.4% in 2014 compared to 2013. Domestic production grew 8.6% in 2013, compared to 2012, according to IBGE data.

✓ The sector’s consumption has grown by 11.5% over the past six years and the past year consumption was 4% despite the slowdown in country’s economy. Also contributing to the development of the local health devices industry is the modernization of hospital infrastructure which has increased the volume of medical tourism to Brazil.

✓ 3D medical printing is expected to develop and find its niche in several areas of medicine. The new field, including investigating applications for 3D printing of biomaterials and living cells; adapting 3D printing for surgical planning; and developing applications for tumor removal, spinal surgery and craniofacial surgery and reconstruction. Only orthopedic surgeries grew 72% in the first four months of 2015.

✓ The continental size of Brazil, the fact that around 40% of the population inhabit areas that are distant from large urban centers and belong to low-income groups susceptible to chronic diseases, show that expanding the mobile health resource (using devices, sensors, biosensors, etc.) could contribute significantly to improving basic care, reducing hospital trips and intensive use of medical drugs, and save public money spent on healthcare.

✓ Brazilians are now connected by smartphone even in areas of difficult access. Opportunities exist therefore to resolve some of the current healthcare bottlenecks by encouraging healthcare staff and the population in such areas to adopt the new health technologies already increasingly used in developed countries.
Management of the basic care network is highly decentralized, and targets specific population groups in an effort to provide comprehensive care and treatment. The system comprises a number of thematic networks and programs, including the *Family Health Program, Basic Health Units* and the *Oral Health Program*. The Family Health Program and the Basic Health Units are considered to be the cornerstone of primary health care in Brazil.

The Family Health Program covers 56.4% of the population. Its basic work is done by 34,702 teams of health workers organized in 1813 clusters who provide services for 109 million people. 39,861 Basic Health Units are functioning in Brazil. The Oral Health Program consists of 860 specialized dental clinics and 19,946 Oral Health teams.

All these programs operate today without any technology, with more than 300 thousand Health Agents throughout the country attending with "paper and pen." The possibilities for computerization are large and should be made quickly. Projections show that by 2020 all Family Health Agents will be using tablets, devices and talking to the Centers through teleconsultation.

In the private sector there were 1417 private healthcare companies in Brazil in 2014. 1199 had “beneficiaries” (i.e. plan holders). 1032 companies (862 with plan holders) sell medical-hospital plans and 385 provide coverage of dental care exclusively (337 with plan holders). Plan holders with private medical plans with or without dental care number 50.8 million, while 21.4 million adults have private dental care plans.

More than 50% of this market (private health funders) performs their work with low levels of computerization, and with low use of devices. The sector’s average loss ratio (retained loss/earned premium) is around 82%, which means almost insolvency. The cost of the sector depends mainly on investments in technology.
Conclusion

We could describe many other vectors in digital healthcare that need support from new companies in Brazil, such as the areas of scientific research, biotechnology, imaging (PACS), consumerizations of healthcare, digital facilities, etc.

This brief report is a summary of the market perspectives in Brazil and Latin America. The eHealth revolution that is ripe around the world, is only beginning in Brazil.

Thank you!

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