

Telefonica's AxisMed:
Optimising healthcare resources in Brazil

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mHealth

By forging stronger connections between the mobile and healthcare industries, the GSMA mHealth Programme is supporting commercially sustainable health services that transform the lives of people in need and promote the wellbeing of mothers and families in developing countries.

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ABBREVIATIONS

3G	Third generation mobile networks
4G	Fourth generation mobile networks
B2B	Business to business
B2B2C	Business to business to consumer
B2C	Business to consumer
EMR	Electronic medical record
GDP	Gross domestic product
HCP	Healthcare professionals
Health IDs	Patient health identifiers
ICT	Information and communications technology
IVR	Interactive voice response
KPI	Key performance indicator
NCDs	Non-communicable diseases
NPS	Net performance score
ROI	Return on investment
SMS	Short message service
SUS	Sistema Único de Saúde, Brazil's national health insurance scheme

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Executive Summary

With over 209 million citizens, Brazil is the fifth largest country in the world by population.[1] Approximately 86 per cent of Brazilians live in urban areas,[2] which is putting growing pressure on health facilities in cities. Greater demand for healthcare services, driven largely by a rapidly increasing elderly population and prevalence of non-communicable diseases (NCDs), is straining public and private healthcare resources alike. It is estimated that by 2050, Brazil will have around 66 million citizens over the age of 60, nearly three times as there were in 2018.[3] NCDs, such as cardiovascular diseases, cancers and diabetes, were estimated to account for 74 per cent of all deaths in Brazil as of 2016.[4] Unnecessary use of healthcare resources poses an additional challenge for healthcare provision in Brazil. In 2017, an estimated $7.95 billion, or 15 per cent of all private health expenditure, was attributed to inefficiencies, such as unnecessary consultations and healthcare procedures and fraud.

Meanwhile, Brazilians are becoming more connected: As of Q4 2018, there were over 209 million mobile connections in Brazil, with 145 million unique subscribers – 68 per cent of the total population.[5] Smartphone connections represented 81 per cent of all mobile connections, and 84 per cent of unique subscribers are mobile internet users. High rates of mobile broadband coverage and adoption, combined with high smartphone penetration, have paved the way for innovative digital solutions to address key challenges in the healthcare sector. As a result, Brazil's digital health market is growing rapidly — evidence of the viable business opportunity of digital health for specialised tech providers and mobile operators. In 2015, Brazil's digital health market was worth over $843 million and it is anticipated to grow by 28 per cent in the coming years.[6, 7]

AxisMed, a wholly owned subsidiary of Telefonica, is a healthcare management intelligence company that combines medical expertise with business intelligence for accurate segmentation and health profiling of private health insurance customers. These profiles provide the basis for tailored, preventative care that supports patients in managing their health and influences their behaviours to ensure they use healthcare resources appropriately. Through its digital services, AxisMed is improving patient health outcomes and creating cost efficiencies for two main paying clients: private health insurance providers and corporate companies that cover the costs of private health insurance for their employees.

Since 2001, AxisMed services have had an impact on the lives of over 25 million individuals. Cumulatively, AxisMed services provide support to over 320,000 beneficiaries via over 35 clients. Through its digital platform, Vivo Bem, AxisMed provides on-demand access to healthcare information and professionals for over eight million active users. As of 2018, AxisMed solutions have had a demonstrated impact on reducing the length of hospital stays, avoiding re-admissions and emergency room admissions, and curtailing overuse of healthcare resources by "hyperusers" — private health insurance customers with above-average monthly insurance claims who have been confirmed to be using healthcare resources inappropriately. In 2018 alone, AxisMed generated a total savings of over $15.5 million for its clients, representing a 3:1 return on investment (ROI).

1. The Brazilian Institute of Geography and Statistics, 2019.
2. CIA (2018), "The World Factbook Brazil".
3. World Crunch, "Aging at Record Pace, Brazil Faces Demographic Emergency".
4. WHO (2016), "Brazil Factsheet".
5. GSMA Intelligence, 2018.
6. The Business Journals (2018), "Global Digital Health Market will achieve 25.9% CAGR to cross $379 billion by 2024".
7. Global Health Intelligence (2018), "2018 Brazilian Health Market Outlook".

Key insights:

- **By providing tailored over-the-phone support to patients before, during and after hospital admission, AxisMed has improved patient health outcomes and lowered costs for its clients.** For example, for one client, AxisMed assisted patients with over 14,400 hospital admissions and reduced the duration of hospital stays by an average of eight per cent, saving the client $4.6 million in customer claims. The post-procedure support it provided to patients has avoided 288 re-admissions, representing an additional $1.2 million in savings.

- **Accurate customer segmentation and health profiling combined with highly personalised telephonic guidance and support, have proven effective in changing health behaviours and reducing health insurance claims.** For example, less than 10 months after implementing AxisMed's Hyperusers service for over 3,400 hyperusers, a client observed an evident change in their healthcare behaviours and use of healthcare resources. This resulted in a decline in average monthly insurance claims among these beneficiaries by 35 per cent, resulting in overall savings of $1.6 million.

- **The first interaction with a patient is essential to building trust and securing patient buy-in to the healthcare management programmes.** Customer enrolment in AxisMed's services was initially quite low, at 50 per cent. However, AxisMed employed more experienced healthcare professionals to facilitate the initial patient call, and leveraged their deep knowledge of each customer to provide them with tailored information about the benefits of the service for them. Following these changes, patient enrolment increased to 70 per cent and patient retention rates are over 95 per cent.

- **Data integration between AxisMed services and the patient medical record systems of various healthcare providers has enabled patient engagement to be tracked effectively.** In the absence of a universal patient health identifier system, AxisMed has developed algorithms that enable records to be identified and matched across different partners' systems and datasets.

- **Telefonica strengthened AxisMed's digital portfolio and boosted its brand recognition.** As of 2019, 23 per cent of all AxisMed solutions were digital, compared to just three per cent in 2016 before it was acquired by Telefonica. Telefonica's established brand and investment in marketing AxisMed services increased brand recognition in Brazil by 30 per cent between 2016 and 2018.

- **Telefonica increased AxisMed revenues by encouraging the adoption of a diversified revenue model.** Telefonica urged AxisMed to shift from pursuing business-to-business (B2B) clients only to exploring business-to-business-to-consumer (B2B2C) and business-to-consumer (B2C) opportunities, as well. As a result, AxisMed revenues increased by 62 per cent between 2016 and 2018.

Healthcare challenges in Brazil and the opportunity for digital health

209m
Population

25%
use private healthcare

75%
use public health resources

POPULATION OVER THE AGE OF 60

24m in 2018

66m by 2050

NCDs account for **74%** of all deaths

1 in 5
Adults are obese

While **8%** are living with diabetes

7m living below the poverty line

ESTIMATED **$7.95bn** OR **15%** of the total private health expenditure, was attributed to inefficiencies

209m
mobile connections

145m unique subscribers

84% are mobile internet users

Network coverage
3G 95%
4G 93%

169m
Smartphone connections

Digital health market

IN 2015 THE DIGITAL HEALTH MARKET SIZE WAS OVER
$843m

APPROXIMATELY **68%** of the total population has access to digital healthcare services

1. Introduction

With over 209 million citizens, Brazil is the fifth largest country in the world by population.[8] Eighty-six per cent of Brazilians live in cities,[9] which is straining the capacity of urban health facilities. A lack of preventative care and a rise in the prevalence of non-communicable diseases (NCDs)[10] are contributing to this challenge. Private healthcare and employer-subsidised health insurance offer an alternative to the public health system, but inefficiencies and overuse of health resources has led to a rise in insurance premiums. However, high mobile subscriber and smartphone penetration rates, and widespread adoption of mobile broadband, have paved the way for digital tools to tackle the country's healthcare problems.

1.1. NCDs, ageing population and inefficiencies in Brazil's healthcare system

For almost 30 years, Brazilian citizens have had access to free public healthcare through the national health insurance scheme, Sistema Único de Saúde (SUS).[11] Brazil's sheer geographical size and unbalanced population distribution pose enormous challenges to providing quality universal healthcare — there are currently just 1.85 physicians and 2.2 hospital beds available for every 1,000 inhabitants.[12] Approximately 75 per cent of the population use public health resources through the SUS, with the remaining 25 per cent opting for private healthcare.[13]

Brazil has the second-largest private insurance market by population in the world (after the United States),[14] and while the number of private health insurance beneficiaries are growing, plan rates and out-of-pocket expenses are rising due to the increasing cost and use of healthcare services. Higher insurance premiums have put a financial strain on both private health insurance customers and the corporate companies that finance approximately 83 per cent of health insurance plans in Brazil. Between 2014 and 2016, Brazil's private health insurance sector lost 2.5 million beneficiaries. To cut expenses, companies have opted for cheaper and less comprehensive health insurance plans for their employees.[15]

The growing demand for healthcare services is driven largely by Brazil's ageing population and the increasing prevalence of chronic non-communicable (NCD) diseases. By 2050, Brazil will have about 66 million citizens over the age of 60, nearly three times as there were in 2018.[16] NCDs, such as cardiovascular diseases, cancers and diabetes, accounted for 74 per cent of all deaths in Brazil in 2016.[17] Approximately one in five adults in Brazil are obese and eight per cent are living with diabetes. The prevalence of chronic disease increases with age, and approximately 51 per cent of individuals aged 60 years or older currently have two or more chronic diseases.[18] NCDs require long-term,

8. The Brazilian Institute of Geography and Statistics, 2019.
9. CIA (2018), "The World Factbook Brazil".
10. WHO (2016), "Brazil Factsheet".
11. Ministério da Saúde, "Constituição Federal".
12. CIA (2018) "The World Factbook Brazil".
13. ANS (2018), "Sector Data".
14. Deloitte (2015), "2015 health care outlook: Brazil".
15. Deloitte (2018), "2018 Global health care outlook: The evolution of smart health care".
16. World Crunch (2018), "Aging at Record Pace, Brazil Faces Demographic Emergency".
17. WHO (2016), "Brazil Factsheet".
18. PMC journal (2017),"Prevalence of multimorbidity in the Brazilian adult population according to socioeconomic and demographic characteristics".

expensive treatment and, in many cases, families lose their main breadwinners to these diseases, forcing them into poverty.[19] While approximately seven million Brazilians were living below the poverty line in 2015, poverty levels could rise as a result of the growing NCD burden.[20]

The prevalence of NCDs in Brazil's workforce represents a significant cost burden for employers and the economy. In 2015, the economic cost of productivity losses arising from absenteeism, presenteeism and early retirement due to ill health, was estimated at 7.6 per cent of gross domestic product (GDP) and is predicted to increase to 8.7 per cent of GDP by 2030. These factors, together with deaths related to NCDs, are expected to cost the country over $184 billion annually by 2030.

The unnecessary and inadequate use of healthcare resources poses an additional challenge for healthcare provision in Brazil. The public health sector does not have a system for directing patients to appropriate health facilities. For example, a lack of patient screening has led to congestion at emergency room facilities caused primarily by non-emergency patients. Similarly, private hospitals have few incentives to keep costs down or improve efficiency, both of which are necessary to control healthcare expenditures and reduce the volume of unnecessary procedures.[21] In 2017 alone, an estimated $7.95 billion, or 15 per cent of all private healthcare expenditure, was attributed to inefficiencies, such as unnecessary consultations and healthcare procedures and fraud.[22, 23]

1.2. Increasing mobile broadband and smartphone adoption

As of Q4 2018, there were 209 million mobile connections and 145 million unique subscribers in Brazil, or 68 per cent of the population.[24] Of these unique subscribers, 84 per cent are mobile internet users. In Q4 2018, 3G and 4G network coverage in Brazil was 95 per cent and 93 per cent, respectively. Smartphone connections in Brazil stood at 169 million at the end of 2018, representing 81 per cent of all connections in the country, and are forecast to reach 86 per cent by 2025.[25] High rates of mobile broadband adoption combined with high smartphone penetration have paved the way for innovative digital solutions to address key challenges in the healthcare sector.

19. WHO (2018), "Noncommunicable diseases".
20. World Bank (2015), http://povertydata.worldbank.org/poverty/country/BRA.
21. Research Gate (2015), "Brazil's mixed public and private hospital system".
22. The total cost of unnecessary consultations and exams was approximately $3.4 billion, while fraudulent hospital bills totalled to $3.7 billion; AxisMed, 2018.
23. Deloitte (2018), "2018 Global health care outlook: The evolution of smart health care".
24. GSMA Intelligence, 2018.
25. GSMA Intelligence, "The Mobile Economy: Latin America and the Caribbean 2018".

1.3. The potential of digital solutions to improve healthcare

Brazil's digital health market is growing rapidly, creating an opportunity for tech companies, including mobile operators, to enter the space. In 2015, Brazil's digital health market size was over $843 million and it is anticipated to grow by 28 per cent in the upcoming years.[26, 27] The digital healthcare industry has a market share of about 47 per cent of Brazil's total healthcare sector and is expected to have a compound annual growth rate of 5.8 per cent between 2016 and 2020.[28] It is estimated that approximately 68 per cent of people in Brazil have access to digital healthcare services.

Brazil's Ministry of Health has also recognised the value of digital health. In 2009, it implemented the National Telehealth Program in 900 municipalities, making telehealth resources available for remote consultation and education of healthcare professionals.[29] The objective of the program is to improve the quality of basic healthcare services offered by the SUS.

Given the pressure on Brazil's public and private healthcare sectors, there is a unique opportunity for digital health solutions to introduce efficiencies and encourage a prevention-based approach to healthcare. In response to this opportunity, health tech company Axis Med, which positions itself in the market as a healthcare management intelligence company, has developed a portfolio of digital services aimed at reducing inefficiencies and unnecessary use of health resources.



26. The Business Journals (2018), "Global Digital Health Market will achieve 25.9% CAGR to cross $379 billion by 2024".
27. Global Health Intelligence (2018), "2018 Brazilian Health Market Outlook".
28. Dr. Hempel Digital Health Network (2018), "Digital healthcare market in Brazil and role of healthcare startups".
29. The Telehealth Center (2009), "The National Telehealth Program in Brazil: an instrument of support for primary health care".



2. Introduction to AxisMed

Founded in 2001 and fully acquired by Telefonica Group in 2016, AxisMed has developed solutions across a range of health areas, including oncology, pregnancy and elder care. AxisMed combines clinical expertise and health data with business intelligence for accurate segmentation and health profiling of private health insurance beneficiaries. These profiles are used to inform tailored, preventative healthcare strategies and drive the adoption of appropriate healthcare behaviours. AxisMed aims to improve health outcomes for beneficiaries and generate cost efficiencies for two main paying clients: private health insurance providers and corporate companies that provide private health insurance for their employees.

Cumulatively, AxisMed services provide health management support to over 320,000 customers via over 35 clients. As of 2019, there were over eight million active Vivo Bem users, and in 2018 alone, AxisMed saved its clients over $15.5 million — a 3:1 ROI.

2.1. AxisMed's portfolio of services

AxisMed's core offering is its **Health Platform**, an electronic medical record (EMR) system that enables a patient's digital medical history to be used by healthcare professionals (HCPs) to provide personalised healthcare guidance and support. The Health Platform integrates health information from the existing databases of healthcare and health insurance providers. The platform is fully customisable for institutional clients, who can also select from a range of other AxisMed services:

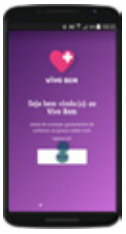
- The **Central Clinic** is a round-the-clock medical call centre service facilitated by highly qualified HCPs with practical experience in the medical field, including emergency care.[30] In addition to providing on-demand responses to health-related questions, HCPs assist health insurance users with minor health issues or direct them to more relevant healthcare services. Information collected during these consultations is captured in the user's EMR on the Health Platform. Built-in, internationally validated algorithms analyse data captured in the Health Platform and automatically generate tailored medical guidance that HCPs share with customers.[31]
- Business intelligence analytics enable the identification of insurance beneficiaries who are either elderly, pregnant, obese or have a chronic condition. Through the **Health Management** service, individuals receive personal support from a team of specialists[32] via a series of phone calls, which helps them manage their health and avoid unnecessary hospital admissions.
- The **Hospitalisation Management** service aims to increase the likelihood of a successful procedure by ensuring patients and their families are adequately prepared, and providing support following hospital discharge to prevent unnecessary re-admissions. HCPs contact customers who are scheduled for a procedure to understand the reasons for their hospital admission. They also confirm that patients have received a second opinion confirming the

30. These include nurses, general practitioners and specialists.
31. HCPs also have access to a database of diseases and related symptoms to support the information and guidance provided to the beneficiary.
32. The team of specialists includes oncologists, nutritionists, physiotherapists and psychologists.

need for the procedure. When hospitalisation is deemed necessary, HCPs provide support to prepare patients for the hospital procedure and provide post-procedure support and automated reminders for follow-up appointments.

- The **Hyperusers** service aims to reduce the costs of private health insurance customers who have above-average monthly claims and have been confirmed to be using health resources inappropriately.[33] HCPs engage with identified hyperusers to understand why they are using healthcare services excessively and to determine their readiness to change their behaviours. Based on this assessment, HCPs create tailored behaviour change plans and engage with hyperusers over a series of calls to provide timely, customised information and guide hyperusers towards more appropriate use of healthcare resources and better health.

- **Consulting service for full healthcare management:** Through its business intelligence service, AxisMed segments the customer base of its institutional clients to identify at-risk customers and propose appropriate and beneficial healthcare management strategies and services that would also help to stabilise client costs. As part of the service, clients participate in quarterly follow-ups in which the consulting team shares key insights, updates on new service changes and recommendations to reduce unnecessary use of healthcare services. This provides AxisMed's institutional clients with greater transparency into how their investment is being managed for maximum return on investment (ROI).



AxisMed's **Vivo Bem** is a business-to-consumer (B2C) mobile service that aims to expand access to healthcare services and actively engage users, simply and effectively. Through the app or web-based platform, Vivo Bem users can access clinics, laboratories and pharmacies at discounted rates. Vivo Bem facilitates digital payments and offers users access to a suite of content covering a broad range of healthcare and wellness topics. Content is tailored for each user based on their health risk assessment and delivered twice a week via app or web portal with reminders sent via SMS or interactive voice response (IVR). A built-in chat function allows users to address health-related queries to a team of nurses, nutritionists, physiotherapists, pharmacists and psychologists. Vivo Bem also directs users to the 24-hour Central Clinic, which requires a phone consultation with a nurse or specialist. Marketed via Telefonica's Brazilian brand Vivo, the service is available to subscribers of any network across the country.



33. For one of AxisMed's clients, the average monthly health insurance cost per hyperuser was around $400, which is approximately four times the average monthly cost per customer.

2.2. Telefonica's contribution to AxisMed's success

To increase its presence in Brazil's growing digital health industry and diversify its sources of revenue, the Telefonica Group purchased a controlling stake in AxisMed in 2013. Later, in 2016, Telefonica acquired full ownership of the health tech company to have greater control over strategic decisions. Telefonica also recognised the potential of AxisMed services to influence the healthcare behaviours of over 30,000 of its employees and reduce the cost of private healthcare insurance, which was its second-highest cost after staff salaries.

Telefonica brought information and communications technology (ICT) experience to the partnership, as well as funds to develop AxisMed's digital solutions. At the time of the acquisition, AxisMed had already begun to embrace digital technologies with its Central Clinic service, which healthcare professionals used to capture patient data collected during exchanges on a variety of communication channels. However, the business intelligence function and AxisMed's adoption of more sophisticated digital solutions were largely due to Telefonica's influence. As of 2019, 23 per cent of all AxisMed solutions were digital compared to only three per cent in 2016. Telefonica also introduced best practices in information security to AxisMed and integrated robust security systems.

Telefonica's established brand and marketing support increased AxisMed's brand recognition — by 30 per cent as of 2018 — enhancing business development efforts.[34] Telefonica's marketing support included promoting AxisMed's brand alongside its own at events and on various media channels.

The mobile operator also created a new division within AxisMed that focused exclusively on business development and sales. AxisMed expanded its business-to-business (B2B) strategy to explore business-to-business-to-consumer (B2B2C) and business-to-consumer (B2C) opportunities. A new go-to-market strategy, greater brand visibility and access to Telefonica's broad network of partners helped boost AxisMed revenues by 62 per cent between 2016 and 2018.

Telefonica also enforced a stronger governance model based on greater efficiency, closer proximity to clients and a strong focus on service delivery and results. This focus on organisational efficiency paid off, reducing AxisMed's fixed operating costs by 31 per cent between 2016 and 2018.

The partnership between an established player like a mobile operator and a specialised health tech company has proven to be an effective model for the rapid scale and digital transformation of health services. The ability to leverage key mobile operator assets has also significantly increased revenue generation potential and opportunities.

34. Brand recognition is the extent to which a consumer can correctly identify a particular product or service just by viewing the product or service logo, tag line, packaging or advertising campaign.

3. Ensuring appropriate use of medical resources

Brazil's private healthcare system does not have a robust patient screening system, which means private health insurance customers have few restrictions on which doctors, specialists and hospitals they visit, and how often they use healthcare services. This can lead to customers using healthcare resources unnecessarily. Patients are also often scheduled for procedures that could be avoided by lifestyle or behaviour changes. These inefficiencies not only make services less available for patients who actually need them, but also create higher costs for AxisMed's clients. Given these challenges, Axismed's portfolio of digital tools has reduced the overuse of healthcare resources by private health insurance customers.

3.1. Reducing duration of hospital stays and unnecessary re-admissions: Hospitalisation Management service

AxisMed's Hospitalisation Management service aims to make improvements in three areas:

1) Preparing patients and their families for hospitalisation;

2) Providing support and guidance to patients and their families during hospitalisation and;

3) Providing post-hospitalisation clinical guidance to prevent unnecessary hospital re-admissions or follow-on procedures.

Private health insurance providers notify AxisMed of any patients scheduled to be admitted to hospital for a medical or surgical procedure. AxisMed healthcare professionals then follow-up with the individuals with a phone call to understand the reasons for hospital referral and ensure that the patient has received a second professional opinion confirming the need for the procedure. AxisMed doctors and nurses also provide patients with guidance on their condition. When hospitalisation is deemed necessary, AxisMed provides guidance to help prepare for hospitalisation, and family members also receive support to ensure they are well prepared to support the patient and follow pre-procedure requirements, which increases the likelihood of success. The Hospitalisation Management service also provides post-hospitalisation support through personalised clinical guidelines for patients to ensure an optimal recovery and avoid re-admission.

3.2. Ensuring the rational use of healthcare resources: Hyperusers service

Through its business intelligence function, AxisMed segments each client's customer base to identify individuals who require specific health management support. Customers prioritised under the Hyperusers service are individuals who have above average monthly insurance claims and have been confirmed to be using healthcare resources inappropriately.[35] Analysis of customer data from one of AxisMed's clients revealed that 2,700 customers, or about 3.5 per cent of the client's total customer base, were hyperusers. In the 18 months before it implemented the Hyperusers service, the client's cumulative health insurance costs for hyperusers was $19.4 million, or an average of almost $400 per hyperuser per month — four times the average monthly cost per customer.

Once customers have been identified as above-average users of healthcare resources, AxisMed's healthcare professionals call the individuals to understand the reasons for it. This typically results in one of two outcomes:

1) The customer's reasons for accessing healthcare services are valid and that this individual could benefit from access to relevant specialist care. In this case, AxisMed's healthcare professionals direct the customer to consult with a relevant specialist under AxisMed's Health Management service.[36]
2) A customer is using healthcare resources inappropriately, thereby confirming that the individual is a true hyperuser. In this case, AxisMed healthcare professionals engage with the customer over a series of calls to guide them to use their health insurance plan more appropriately, to direct them to relevant specialists or care services, and to influence their health behaviours to reduce unnecessary use of medical resources.

AxisMed's approach to changing the behaviours of hyperusers is guided by two key strategies. The first uses available information on hyperusers to assign a unique persona to each customer. To influence their behaviours, healthcare professionals are trained in each persona's preferred communication style. For example, an older customer persona would indicate their preference for receiving more comprehensive information over a longer period, while a younger customer persona would indicate a need for concise information sharing.

35. Inappropriate use of healthcare resources can either mean that patients are receiving services that are not necessary, or they are receiving care from health professionals or facilities that are not suitable. Among other things, AxisMed agents review the documentation of a patient's diagnoses and prognoses, and consider other relevant factors, such as personal preferences or environmental or organisational factors that may have influenced their use of health resources. Patients with valid reasons for above-average monthly health claims, for example, chronic or elderly patients or pregnant women, are removed from this segment of beneficiaries.
36. As part of the Health Management service, beneficiaries receive tailored support from a team of specialists, including oncologists, nutritionists, physiotherapists and psychologists. This service is only available to beneficiaries of clients who have subscribed for it as part of their package.
37. Prochaska and DiClemente (1983), *The Transtheoretical Model*.

The second strategy creates customer profiles based on their readiness to receive guidance and change their health behaviours. AxisMed locates customers in one of five phases of a "change journey", as defined by the Transtheoretical Model.[37] Healthcare professionals then provide custom information and guidance to customers according to their phase in the journey (see Figure 1).

FIGURE 1

Stages of health behavior change and patient support provided by Axismed at each stage

Phase	1) Pre-contemplation	2) Contemplation	3) Preparation	4) Action	5) Maintenance
Patient description	Patients are not ready to change their behaviours.	Patients are getting ready to change.	Patients are ready for change.	Patients have made specific, overt adjustments to their lifestyles.	Patients have made specific, overt adjustments to their lifestyles and are working to prevent relapse.
AxisMed support	Educate individuals on the consequences of continuing their current behaviours in order to spark a greater desire to change.	Engage with patients to increase their propensity to change their behaviours.	Guide individuals to identify appropriate, immediate steps to take.	Help patients see the benefit of their actions to encourage them to follow through with the required change.	Follow up frequently with patients to ensure appropriate behaviours are sustained.

3.3. Overcoming challenges with data integration, patient buy-in and retention

Informed patient consultations rely on having a complete record of a patient's health history. AxisMed's Health Platform EMR pulls patient data from medical record databases of healthcare providers (private hospital groups) and insurance providers. However, since organisations use different formats for patient health identifiers (health IDs), it is challenging to match health IDs and health records from different databases. To overcome this challenge, AxisMed has developed algorithms that enable records to be identified and matched across different partners' systems and datasets.

The first point of engagement with a patient is essential to build trust and secure buy-in for AxisMed services. Once AxisMed has identified customer segments that require health management support, individuals provide consent to participate in the health management programme. Initially, AxisMed found that the customer enrolment rate was quite low at

37. Prochaska and DiClemente (1983), *The Transtheoretical Model.*

50 per cent, meaning that the impact of its services was immediately halved. To address this, AxisMed prioritised the patient enrolment stage, providing highly personalised information on the benefits of the service for each customer, and employed more experienced doctors and specialists. Although more of an investment, this greatly improved the quality of patient consultations, especially the first introductory call, which has increased patient enrolment to 70 per cent and improved patients' adherence to medical guidance.

Another effort to ensure high-quality patient consultations involved monitoring quality-related key performance indicators (KPIs) and implementing a performance-based incentive scheme for its healthcare professionals. Internal quality auditors routinely review consultation recordings to determine whether the data captured in a patient's EMR in the Health Platform matches the information shared in the consultation and meets minimum quality requirements. If not, the health professional is mandated to attend sessions with AxisMed's technical and clinical training teams to improve their performance. If the data captured satisfies quality requirements, the health professional receives an award as an incentive to sustain this performance. Since implementing these changes, the quality of care has steadily improved from 78 per cent in 2016 to 87 per cent in 2018. Over the same period, the customer net performance score (NPS) rating of AxisMed services has increased from 65 per cent to 76 per cent, and the patient retention rate is now at 95 per cent. Furthermore, the productivity rating of AxisMed's team of healthcare professionals increased by 20 per cent from 7.7 in 2016 to 9.2 in 2018.

Early on, AxisMed understood the value of accurately segmenting private health insurance customers to provide relevant, targeted and timely support. AxisMed is continuously re-evaluating these customer segments, and recently identified the need to target an additional segment of 'at-risk' customers who may not currently have excessive monthly claims, but are predicted to develop potentially chronic conditions that would increase their use of healthcare services. By engaging with these individuals to optimise their health behaviours, AxisMed is driving more effective preventative care.



3.4. AxisMed services deliver positive health outcomes and cost savings

Through its Hospital Management service, AxisMed has improved the health outcomes of patients and saved its clients significant costs. For example, for one client, AxisMed assisted patients with over 14,400 hospital admissions and reduced the duration of hospital stays by an average of eight per cent, or about one to two days.[38] This has generated a total savings of $4.6 million in customer claims for AxisMed's clients. The post-procedure support patients receive has avoided 288 re-admissions, representing an additional $1.2 million in savings. Furthermore, through the AxisMed Central Clinic service, 12 per cent of potential emergency room admissions were avoided through timely deployment of ambulances for home-based care, and another 59 per cent of potential emergency room admissions were avoided through effective consultations between AxisMed healthcare professionals and patients.

AxisMed's highly tailored approach to behaviour change has proven effective in changing hyperusers' behaviours and reducing their health insurance costs. Among one group of over 3,400 hyperusers, average monthly insurance claims dropped by 35 per cent in 10 months of implementing the Hyperusers service. Over this period, the client had paid $300,000 in subscription fees for the Hyperusers service, but enjoyed a return of $2 million in gross savings from the reduction in claims. This generated an overall savings of $1.7 million or 5.6:1 ROI for the AxisMed client, and a reduction in work hours lost due to illness-related absenteeism.

Positive health outcomes have resulted in high levels of patient satisfaction with AxisMed services. Seven months after one client implemented Axis Med's Healthcare Management services, a patient survey showed 96 per cent satisfaction with phone consultations and 97 per cent satisfaction with the guidance and support provided by AxisMed healthcare professionals. Furthermore, 95 per cent of the client's customers said they were highly likely to recommend AxisMed services.

Although the commercial benefits of AxisMed services are mainly evident in the private sector, these solutions have the potential to provide similar cost savings for Brazil's Ministry of Health. More importantly, by implementing the types of digital solutions AxisMed offers in the public health system, 75 per cent of Brazil's population would receive better healthcare support. This would optimise the use of public health resources and significantly improve national health outcomes. Applying AxisMed's patient segmentation approach could help the Ministry of Health to identify and target specific population segments with relevant and timely healthcare services and information, and build a foundation for a more preventative healthcare strategy.

38. The average cost of a patient's hospital admission is approximately $510 per day.

4. Business model

While AxisMed generates B2C revenues through its patient-facing digital solutions, its main revenue models are B2B and B2B2C, which focus on two types of clients:

- **Private health insurance providers,** which see cost savings and higher profits when their customers use healthcare resources appropriately; and
- **Corporate companies** that finance private health insurance packages on behalf their employees, which enjoy cost savings from lower monthly premiums due to employees making fewer health insurance claims. Corporate companies also reap the benefits of a healthier workforce.

Because of excessive beneficiary insurance claims, private health insurance providers suffer from low profit margins and look to offset profit losses by increasing monthly insurance premiums. This places a significant financial burden on corporate companies that absorb these health insurance premium costs on behalf of their employees. In 2017 alone, the cost of private health insurance in Brazil grew by 15 per cent, reaching $32.6 billion.[39] For one in four corporate companies, health insurance costs account for 10 to 20 per cent of all employee-related expenses, while for seven per cent, this cost represents an even bigger portion of employee costs.[40] For most companies in Brazil, employee health insurance costs are the second-largest expense after employee salaries.

AxisMed's core offering is the Health Platform, which can be licensed to clients for use on its own or as part of a fully managed service. For an added fee, AxisMed offers business intelligence consulting to optimise the Health Platform and integrated processes. The first step is for AxisMed's business intelligence team to segment the client's customer or employee base, drawing on an analysis of existing data to identify the most relevant suite of AxisMed services. Each of its services can be fully customised. For example, clients can either opt for the basic package, which captures the most essential patient health data, or subscribe to the premium package where AxisMed employees collect more comprehensive data during consultations.

AxisMed intends to grow its B2B revenue by optimising its existing portfolio of healthcare management services and creating new integrated solutions for large corporate companies. As of Q1 2019, AxisMed's B2C revenue through its Vivo Bem service represented only 10 per cent of total revenues, and has been identified as an area for potential business growth. AxisMed will continue to optimise its Vivo Bem product and develop new, more comprehensive digital products for the mass market. AxisMed is also enhancing its business sustainability by identifying processes that can be automated to improve productivity and reduce costs, while also improving the security and architecture of its systems.

By diversifying revenue streams, providing patient-centric services with demonstrated ROI for its clients, and maintaining a strong commitment to optimising efficiency and operating costs, AxisMed is not only growing revenues and increasing its profitability, but also securing itself as a key player in a highly competitive industry.

National Supplementary Health Agency (2018)
Valor econômico (2018)

5. Future roadmap

Optimising or expanding existing services

While the existing call-based health service that underpins most of AxisMed's services adds significant value for patients, AxisMed is exploring the integration of multi-channel features to increase customer access to support at any time and expand the reach of AxisMed services. One of these is the incorporation of a chatbot in its existing Health Platform and Central Clinic services to allow patients to get answers to frequently asked questions and access general health information in real time. This basic artificial intelligence (AI) technology not only lowers the cost of service and allows AxisMed to reach a greater audience, it also frees AxisMed's healthcare professionals to spend their time on more complex patient cases.

Enhancing prevention strategies through patient-facing solutions

Over the next few years, AxisMed intends to improve its patient-facing service, Vivo Bem, as part of an effort to enhance prevention strategies. As of February 2019, over two million Vivo customers were using the Vivo Bem app with over 30,000 new user registrations per month, with the potential to reach 100 million Telefonica subscribers. AxisMed intends to develop an iOS app in addition to the existing Android version to make the app accessible to a broader population.

AxisMed will be implementing a microinsurance service to make private healthcare more affordable for middle- and lower-income populations, and to increase the value of the service offering for health insurance clients. It is also developing tailored "health coach" apps for specific customer segments, such as employees with chronic health conditions. The apps will have built-in functionality to monitor trends in user behaviours and identify inappropriate health-related habits. This will trigger timely intervention with users to encourage them to adopt appropriate behaviours and take greater ownership of their own health.

Forging stronger partnerships with healthcare providers

AxisMed is looking to partner with healthcare provider companies to enhance the impact of its healthcare management services. It has identified healthcare provider employees — the healthcare professionals — as key actors in the patient behaviour change journey. If staff at healthcare facilities are incentivised to help patients use healthcare resources appropriately, they could be an important channel through which to influence health behaviours.



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