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Evaluating the Social Value of Impact Investments: Vox Capital and Magnamed

Introduction

In a full auditorium at a São Paulo convention center, in December 2019, entrepreneurs, investors, opinion leaders and academics gathered to hear Gilberto Ribeiro, a partner of Vox Capital, the first impact investment fund in Brazil. He was offering his view of investment market trends in Brazil and Latin America. There was a buzz in the room about the panel dedicated to the exciting emerging field of impact investment.

Gilberto Ribeiro's presentation strategy was straightforward: to present Vox Capital's investment proposition through examples from its portfolio. He began with investments in healthcare companies. Ribeiro reminded the audience that even though Brazil was among the world's ten largest economies, it was also one of the ten most unequal countries on the planet. The government's *Sistema Único de Saúde*, SUS (Unified Health System), was the primary provider when people in Brazil needed healthcare. Around 70% of the population did not have private health insurance, especially those in low-income classes. Even though SUS provided universal health services in the country, it faced significant problems, including hospital bed shortages, mainly due to lack of both equipment and personnel trained to operate.

This teaching case was prepared by Professor Graziella Maria Comini, Professor Rosa Maria Fischer, and Juliana Rodrigues, from the University of São Paulo, and Professor Rosa Amelia González, from the *Instituto de Estudios Superiores en Administración* (IESA), as part of the SEKN case collection, with the sole purpose of assisting instructors in the use of the case. We thank the Vox Capital and Magnamed teams for the information provided. The situation described is hypothetical, based on previous situations reported by the interviewees.

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On the date of publication of this case, the SEKN was formed by EGADE, ESADE, ESPAE, IESA, INCAE, Universidad de Los Andes, Universidad de San Andrés, Universidad Adolfo Ibáñez, Universidad del Pacífico and Universidade de São Paulo.

At this point in his presentation, Ribeiro did not hide his enthusiasm as he introduced Magnamed, a company that produced innovative pulmonary ventilators and which received investment from Vox in 2015. He continued saying:

Magnamed products can make the SUS better, providing a more comprehensive access and improved the quality of healthcare services. Its products are cheaper, easy-to-use, and better adapted to the living conditions of our country since they take up less space and their batteries last longer. Moreover, Magnamed's financial return figures are robust, and its international expansion plans enhance the prospects for business success.

This last point prompted a challenge from the panel moderator: "In seeking to grow abroad, does the company continue with its social focus?", he asked Ribeiro. "Do Brazilian public hospitals no longer have a shortage of beds and equipment?"

After a brief but thoughtful silence among the audience, Gilberto pointed out that impact businesses also needed to show a financial return: "Well-planned growth generates the necessary financial sustainability for the company's plans." Ribeiro concluded his presentation with the recurring notions that represents one of the main challenges in the field: to reconcile the need for profit generating financial sustainability with a commitment to creating a positive social impact.

Later, feeling dissatisfied with his own response, Ribeiro acknowledged that Vox Capital needed to evaluate its investment in Magnamed. If it was not clear how the company's growth strategy aligned with the generation of social value, should Vox continue to invest in Magnamed? Why or why not? What were Vox's options in the case of Magnamed?

Vox Capital: the first impact investment fund in Brazil

We want to create a different business model, but there are no ready-made formulas. And the gravitational force pulls us all the time to conduct business as usual, as we have always known how to do it and with the same incentives; in short, it's the common ground.

- Daniel Izzo, founding partner of Vox Capital.¹

This statement from Daniel Izzo, a founding partner of Vox Capital, revealed part of the motivation behind introducing this innovative idea in the Brazilian market: to create mechanisms for direct investments in businesses that seek to solve the country's social problems, especially those that hinder equitable access to quality essential goods and services for all the population. In so doing, Izzo and his partners created the first impact investment fund in Brazil. This term has been coined globally as a way of combining financial return and social value generation.²

¹<http://revistapegn.globo.com/Banco-de-ideias/Negocios-sociais/noticia/2017/02/transformacao-social-positiva-e-uma-utopia-gente-nunca-vai-estar-la.html> consulted on Feb 16th 2021

² The concept of impact investment is also expressed in other ways, such as: social finance, social impact investing, blended value investing or social investing (Clarkin & Cangioni, 2016)

With this idea in mind, a group of entrepreneurs with different trajectories and experiences came together to put it into practice in Brazil: Daniel Izzo (43), former marketing executive of a multinational that manufactured pharmaceuticals & medical devices and personal hygiene products; Kelly Michel (39), one of the founders of the impact business accelerator Artemisia; and Antônio Ermírio de Moraes Neto (35), administrator and descendant of one of the most established families in Brazilian businesses.³ In January 2009, Vox Capital was born, the first impact investment company in Brazil, and its first fund went into operation in 2012. Gilberto Ribeiro (34) joined Vox Capital as partner in 2012. Vox Capital operated in the venture capital model, by acquiring minority interests in companies in their early stages. It was one of the first investment companies certified as a B Corp in March 2015, then re-certified in 2019, and it was among the first listed on the Global Impact Investment Rating System (GIIRS) as a rated investment fund (see Exhibit 1).

According to data from April 2015, the company's first investment fund, Vox Impact Investing Fund I, was worth more than BRL 84 million (Brazilian reais)⁴ under management. The Brazilian government agency, FINEP,⁵ was its largest investor, accounting for 25% of capital (Projeto Draft, 2015). By 2015, the company had analyzed more than 1,400 investment opportunities and made 20 capital investments, with values between BRL 450,000 and BRL 4.5 million,⁶ in 10 businesses, including Magnamed. Vox Labs, an arm of Vox that operated with seed capital, made investments ranging from BRL 50,000 to BRL 300,000 in less mature startups, in the form of convertible debt securities. In 2016, the company launched its second investment fund (Vox Impact Investing Fund II), with BRL 50.22 million assets under their management.

Vox Capital's Impact Investment Thesis

As stated in VOX Capital's Social Impact Report 2019, "Vox was founded in 2009, with the purpose of creating a world where businesses can generate positive social transformations. Over the past ten years, we have realized that the reason for our existence exceeded the business impact. We came to understand that the entire flow of money has the potential to generate abundance, equality, and positive social and environmental transformations, ultimately improving our human experience while nurturing the planet" (see Theory of Change in Exhibit 2).

³ To learn more about Vox Capital and the tensions to create an impact investment, see the Harvard case about the impact investment fund (HBS Case Number 2088.0), available at: <https://case.hks.harvard.edu/vox-capital-pioneering-impact-investing-in-brazil/>

⁴ In January 2012, USD 1,00 = BRL 1.83 (see Exhibit 7).

⁵ The Funding Authority for Research and Innovation (FINEP), is a Brazilian public company that fosters science, technology and innovation in companies, universities, technological institutes and other public or private institutions, linked to Brazil's Ministry of Science, Technology and Innovation (MCTI).

⁶ In December 2015, USD 1,00 = BRL 3.87 (see Exhibit 7).

Although in 2019 Brazil was one of the world's ten largest economies, it was ranked as the 9th country with highest income inequality as measured by the Gini coefficient. Sixty-two percent of the Brazilian population earns a family income below the minimum required to guarantee housing, food, education, health, leisure, clothing, hygiene, transportation, and social security (see **Exhibit 3**). Given these conditions, Vox Capital decided to invest in businesses that improve the current allocation of essential services, such as education, healthcare, and financial services, and thereby contribute to reducing inequalities among the social classes in Brazil.

Vox Capital Working Model

In addition to providing venture capital, Vox Capital also offered strategic advice and support to the management of nascent companies with high growth potential in order to maximize their financial and social results. One way of doing this was through the participation of the investment fund representative in the investor's board of directors, a condition spelled out in the investment contract, which intended to ensure the good governance of the enterprise. The aim was to help companies overcome obstacles that Vox had identified in the development of these businesses. One such obstacle was the gap in "market intelligence" between the design of value propositions while remaining congruent with the reality of the communities to be served. Another was the difficulty in building distribution networks and facilitating access to users and customers. A third was addressing the scarcity of credit, financing, and securitization products available to consumers at the base of the pyramid.

Vox Capital sought companies with high potential to scale their performance, with innovations that improved the essential service provision, preferably with recurring revenue models. To manage the range of investment operations, from identifying businesses to exiting or divestiture processes, Vox used its own Impact Outlook.

Vox's remuneration was composed of a management fee, calculated annually (at about 2%) on the amount of total capital committed, and a performance fee. The latter could reach 20% over profitability, taking into account the financial performance and social impact of the portfolio, which should reach a minimum of 192 GIIRS rating points (see **Exhibit 4**). "This was one of the alternatives we found to support and prove our focus on social impact, including a fund performance metric that focused on social performance," explained Gilberto Ribeiro. Social performance was subject to the GIIRS assessment of the fund through the companies in its portfolio, and should be higher than the average of other funds evaluated by GIIRS in the customer criterion. In 2018, the B Lab announced the discontinuity of the funds rating. Given that, Vox Capital studied new approaches and methods that could be applied to monitor and classify its impact performance.

Providing Health Services in Brazil

In Brazil, health is defined as a universal right and a state responsibility by the 1988 Constitution. The SUS, the Unified Health System, was created in 1990 to fulfill this basic right. The primary principle that guides SUS was the offer of health services free of charge to any person in the Brazilian

territory. The SUS was based on three fundamental principles: 1. universal access to health services; 2. equal access to healthcare; and 3. full coverage and continuity of care. The SUS covered all Brazilians indiscriminately, monitoring health and nutrition, epidemiological surveillance, providing blood, organ and tissue transplant, among other services.

A 2018 national survey⁷ found that around 70% of the population did not have private health insurance, of which approximately 45% used SUS when they needed assistance, particularly those from mid- and low-income classes (77%). The remaining percentage had to pay for their own necessary services. On the other hand, 30% claimed to have private health insurance, especially the wealthier families, from upper and upper-medium income classes (55.4%); 13.2% had company-paid benefits; 11.5% bore the costs themselves, and 5.6% had a plan paid for by third parties –mainly the younger age group of 18 to 34 years old (8.3%). According to the National Supplementary Health Agency (ANS, 2020), the federal agency that regulated private health care plans and providers, around 24% of the total population in Brazil had private health care insurance.

In other words, people from higher-income segments of the population usually depended on private health care providers, while most of the population, especially low-income people, relied on SUS. It is also important to note substantial regional differences. Access to private health insurance was the lowest in northern Brazil (the poorest region) and the highest in southern Brazil (the wealthiest region).

Health sector experts and studies recognized the importance and the value of SUS in providing access to health services in an unequal country like Brazil. Outside the urban and economic centers, the structure of SUS was the primary entity responsible for any health assistance. According to the Federal Ministry of Health, about 110 million people were served by Community Health Agents (ACS), who worked in 95% of Brazilian municipalities⁸. Among other impacts, SUS had almost six thousand hospitals and more than sixty thousand contracted outpatient clinics, conducting more than two billion outpatient procedures per year, with over eleven million hospital admissions per year.⁹ Due to its extension and coverage, the Brazilian primary healthcare program was considered by other countries a paradigm to be imitated. The SUS had contributed significantly to the improvement of health in Brazil.

Despite the impressive numbers and contribution to Brazilian health achievements, SUS faced several challenges, including poor management, under-funding, and lack of resources. Challenges regarding capacity, quality, and efficiency resulted in long waiting lists for health assistance. Some specialists pointed out that, due to the structure and regulation of the health sector in Brazil, the role of the private sector, represented by health plans and insurance, which received massive tax benefits, was less of a complement to the SUS, than it was competition with the public sector.

⁷ <https://www.spcbrasil.org.br/pesquisas/pesquisa/4210>

⁸ <https://bvsm.sau.de.gov.br/bvs/pacsau.de/diretrizes.php>

⁹ Mendes, E. V. (2013). 25 anos do Sistema Único de Saúde: resultados e desafios. *Estudos Avançados*, 27(78), 27–34. <https://doi.org/10.1590/S0103-40142013000200003>

The unavailability of hospital beds and professionals is one example of the shortages in the system. In 2013, the demand for hospitalization in the SUS corresponded to 83% of the total for that year, whereas the supply of beds under the SUS system was just 54% of the beds available in Brazil. In addition to high demand, the public health network suffered from the unavailability of intensive care beds due to lack or inadequate use of medical equipment. Among the problems detected were the inadequacy of the physical infrastructure for installation and use of these devices. According to data from the Systemic Health Surveillance Report carried out in 2014 of the Federal Audit Office, among the major problems faced by SUS was the shortage of hospital beds mainly due to lack of equipment and personnel (doctors, nurses, and other professionals) with sufficient training to operate them. The report about the SUS pointed out that¹⁰:

- 77% of surveyed hospitals reported bed blockage due to lack of minimal equipment (monitors, pulmonary ventilators, tomography, mammography);
- 59% of hospitals provided inadequate care due to broken or outdated equipment;
- 45% of hospitals reported an absence of or a deficiency in equipment maintenance contracts;
- 23% of hospitals purchased equipment that was not installed or used for lack of qualified personnel.

Vox Capital Investment in the Health Sector

Vox Capital built its investment thesis based on a comprehensive study sponsored by one of its first investors that sought to understand the main challenges in providing access to basic services, including health services. According to this study, under-financing, lack of managerial training of professionals, and absence of integrated information and management systems resulted in high levels of widespread dissatisfaction in the health sector. The central deficits were long queues for consultations and surgeries; lack of attendance for oral health and preventive dentistry; difficult access to specialists; urban concentration of doctors and other professionals; concentration of specialized services and equipment in the private sector; and absence of integrated information and management systems, associated with the availability of ICU beds and equipment in the SUS.

After identifying the most relevant problems in the health sector in general and the role of SUS in particular, Vox Capital set out to prioritize investment in the health sector. It took into consideration which of those problems could be addressed by the private sector, and the various solutions that could benefit from the kind and level of investments they offered. "Many problems cannot be solved by private actors due to regulatory issues, for instance, or maybe the complexity and scalability require a change in the public policies when it involves basic sanitation, for example," reflected Ribeiro. This analysis led to delineating the challenges Vox Capital investments would seek to tackle. Among them was the qualification and improvement of the health services, including the support considered necessary to "make SUS better"; and it included other solutions to complement the supply

¹⁰ <https://portal.tcu.gov.br/biblioteca-digital/relatorio-sistemico-de-fiscalizacao-saude.htm>

of health treatment where there was a notable deficit in the public sector. In this sense, that included solutions that sought to promote greater "efficiency and resoluteness applied to health management" and "training of health professionals".

The Decision to Invest in Magnamed

The first major challenge for an impact investment fund such as Vox Capital was to identify investment opportunities in line with the intentions and the focus defined by its investment thesis. Vox Capital received many investment proposals from startups for analysis. However, fund managers also actively scouted for businesses with potential for social impact through events related to the focus areas. "We are always present at important events in the three sectors mapped in our investment thesis —health, education, and financial services— in order to constantly update ourselves on the challenges and solutions that can help solve social problems in these areas," explained Ribeiro.

Vox approached Magnamed based on active scouting in the sector after an initial encounter at a national hospital trade fair. Participation in fairs and congresses for medical and hospital products had also been the most crucial Magnamed's marketing strategy since the inception of the firm, before it offered any products. Ribeiro explained:

When we looked at Magnamed, we realized that it had the dream of improving the efficiency of ICUs as a whole, but using the technical vocation of engineers to innovate equipment that would be more compatible with the Brazilian reality and emerging markets in general.

Wataru Ueda, founding partner and CEO of Magnamed, said that they considered themselves a healthcare company, and that Vox Capital introduced them to the notion of social impact because it is the central platform of the investment fund. The main features of Magnamed's lung respirators were more appropriate to the context of developing countries like Brazil, and thereby supported the improvement and quality of its public healthcare system.

Magnamed's value proposition could support addressing one of the challenges prioritized by Vox Capital's investment thesis in the health sector, especially in terms of "efficiency and resoluteness applied to health management." Hospital automation had the potential to spark a significant improvement in medical-hospital service capacity, especially in the public sector, which provided care for low-income segments of the population. Research data about the healthcare sector showed that the public service performed 54% of the ICU's critical care offerings, but with a significant bed shortage due to lack of essential equipment.

Magnamed differed from the rest of Vox Capital's investment portfolio at the time because it already had a robust turnover, a history of receiving other types of resources, and the presence of another fund in its shareholding structure. Despite this, as Ribeiro explained, it resembled a typical startup, since it was still battling to include their products in the market, and experimenting and consolidating its value proposal, a common characteristic of a firm in its early stages. Most of its previous investments were focused on the development of technological innovation of the product,

but Magnamed still needed to work harder on other aspects of the business model, including understanding the main proposition of its social impact.

Magnamed's Story Before and After Vox Capital's Investment

Our mission is to help save lives; it's as simple as that, but at the same time, it's our greatest driver.

- Wataru Ueda, founding partner and CEO of Magnamed

Magnamed was founded in 2005 by three engineering partners pursuing ideals of innovation and efficiency: Tatsuo Suzuki, Wataru Ueda, and Toru Miyagi Kinjo. Since its inception, the founders' goal was to develop intensive care therapy equipment to contribute to sustaining patients' lives. "We are a healthcare company, and we chose the critical care sector when we were still developing the project because we realized that it would be an area in which our technical expertise could make a significant contribution, while it is also a market with space for the development of new solutions," explained Ueda.

In its early months, the company operated in a 15 meter² garage at Ueda's mother's home. The first product they created was a prototype calibrator used to test pulmonary ventilators used in ICU, the Ventmeter.¹¹ Another prototype was a portable pulmonary ventilator that did not use tubes to interconnect the pneumatic valves, thereby facilitating assembly and reducing the repetitive movements of workers, and thus reducing the risk of accidents in the factory.

With these prototypes in hand, the partners went in search of structured support of an entrepreneurial incubator. In early 2006, the project was approved and joined a set of startups supported by CIETEC (Center for Innovation, Entrepreneurship, and Technology), of the University of São Paulo, one of the largest and best-established incubators in the country. At CIETEC, they had the opportunity to meet the agencies working in the areas of research and scientific-technological development, and obtained financing from Fapesp,¹² FINEP,¹³ and CNPq.¹⁴ In 2008, they finalized the products they considered could meet the needs of the medical-hospital sector and the characteristics of the Brazilian market: the Ventmeter was finished and the prototype OxyMag, the company's first portable pulmonary ventilator, was under testing. Between 2008 and 2010, Ventmeter became the flagship product of the company.

¹¹ <http://www.cietec.org.br/magnamed-da-garagem-para-o-mundo/>

¹² The Foundation for Research Support of the State of São Paulo (FAPESP) is a public institution for the promotion of academic research linked to the Secretariat of Economic Development, Science, Technology and Innovation of the state government of São Paulo

¹³ The Funding Authority for Research and Innovation (FINEP), is a Brazilian public company that fosters science, technology and innovation in companies, universities, technological institutes and other public or private institutions, linked to Brazil's Ministry of Science, Technology and Innovation (MCTI).

¹⁴ The National Council for Scientific and Technological Development (CNPq) is a body linked to the Ministry of Science, Technology and Innovation (MCTI) to encourage research in Brazil.

The year 2008 represented a milestone in the company's history. In addition to launching the first product, Magnamed inaugurated its first factory in the state capital and sought its first round of investment. The company moved to a 250 meter² rented warehouse to obtain the approval of ANVISA,¹⁵ and began production. A financial contribution of BRL 1.5 million¹⁶ was made by Fundo Criatec¹⁷ in June 2008, when the startup began to receive third-party capital, although it was not yet generating income. Magnamed received BRL 6 million in grants from Criatec in two investment rounds in 2008 and 2011. The fund was aimed at the application of seed capital in emerging and innovative companies, making investments of up to BRL 5 million to initiatives that were in their initial stages and projected a high return.

It was not until the end of 2010 that Magnamed obtained the necessary licenses to manufacture and sell medical and hospital products. The first of these was a certification granted by the European Community in November 2010. Therefore, the company's first sale did not occur in Brazil: it won a bid in South Africa to supply over 200 portable ventilators. The Good Manufacturing Practices Certificate granted by ANVISA to operate in the national market was obtained only in July 2011.

It was not until 2011 that the OxyMag product was officially presented in the Brazilian market. The portable lung ventilator for use in ICUs and ambulances brought important innovations—simplicity of operation, adaptability to the age of the patient, and a battery life that allows prolonged use—and became the flagship product of the company's portfolio. It is important to note that, from the outset, the founders sought to develop products aligned with international standards in order to compete with the foreign equipment that dominated the domestic market. However, they also had to introduce innovations in consonance with the Brazilian reality, such as optimized battery life, which was necessary for long-distance needs.

When Magnamed launched OxyMag in 2011, most of its sales (around 70%) were in the international market and only 30% were domestic, but by 2016, this ratio reversed. Domestic expansion allowed the company to register a 150% growth between the years 2012 and 2014, create a network of resellers, strengthen its strategy to participate in congresses and fairs for hospital products to present its solution and become known in the market. In 2013, Magnamed was approved to join Endeavor's entrepreneur network, and introduced two new products, BabyMag and FlexiMag, joining the ICU ventilator market.

The year 2015 marked a second cycle of growth for the company, with the opening of a larger factory in greater São Paulo, the securing of a third financial investment, and the placement of these two new products. Between late 2014 and early 2015, the new 3,000 meter² factory began operating in the industrial district of Cotia. In 2017, the launch of FlexiMag Plus and OxyMag Agile lung ventilators complemented the company's growing product portfolio.

¹⁵ The National Health Surveillance Agency (ANVISA) is a national regulatory agency linked to the Ministry of Health of Brazil

¹⁶

In June 2008, USD 1.00 = BRL 1.63

¹⁷

Fund for innovative micro and small companies developed by BNDES (National Development Bank).

In 2015, Magnamed received its second financial investment of BRL 10 million, this time in the form of equity from Vox Capital. As a result, Vox Capital became a shareholder with a 19.7% holding, along with the Criatec Fund (36.9%) and the founding partners —Wataru Ueda (21.8%), Tatsuo Suzuki (14.0%), and Toru Miyagi Kinjo (7.5%). Vox also received a seat on the board of directors.

The importance of Magnamed in the national market was evident in 2016 when it became the official supplier of emergency ventilation equipment for the Rio de Janeiro Olympics. In the same year, Magnamed was estimated to hold 8.3% of the domestic market. By virtue of the price/value ratio of its products, Magnamed was very attractive to the private sector, where purchases exceeded those from the public sector, especially in the case of ICU equipment (see Exhibit 5). Among other factors, the commercialization to the private sector was much easier compared to SUS procurement procedures (see Exhibit 6).

At the same time, the export market became increasingly important as its sales extended to more than 50 countries on four continents, especially Colombia, Mexico, Panama, Egypt, Tunisia, and Turkey. The main markets were emerging countries, where the characteristics of the Brazilian equipment were suited to local realities: "approximately 85% of the portable ventilator market in Panama is provided by Magnamed," affirmed Ueda. Approximately one third of Magnamed's monthly output was destined for the international market (see Exhibit 5).

The emphasis on the export market also followed a broader trend in Brazil at the time when exportation volume was increasing. Since January 1999, Brazil's Central Bank adopted a floating exchange rate policy, in which the exchange rate fluctuates according to market supply and demand. This policy decoupled the value of the dollar from the Brazilian real rate as the primary form of inflation control. The continued devaluation of the Brazilian real, increasingly accentuated after 2014, encouraged entrepreneurs to search for foreign markets or sales option (see Exhibit 7). Data from the Ministry of Development, Industry and Trade (2017) indicated that the growth of Brazilian exports, observed since 2014, was also stimulated by commercial agreements, tax exemption and the implementation of an Integrated Foreign Trade System, which reduced the exportation and importation terms by 40%, simplified the procedures for external sales and reduced documentation required, stages and requirements.¹⁸

This scenario led the company to seek new opportunities in international markets. In 2017, it announced bold internationalization plans¹⁹ when it opened its first factory abroad, with an investment of BRL 2 million, in Pompano Beach, Florida, in the United States. The presence in North America was a strategic choice for international growth, as it allowed for not only greater competitiveness to bid in the country, due to the priority given to locally produced products, but also

¹⁸ <http://www.mdic.gov.br/index.php/ultimas-noticias/3223-exportacoes-brasileiras-crescem-acima-da-media-mundial>

¹⁹ <http://www.mdic.gov.br/index.php/ultimas-noticias/3223-exportacoes-brasileiras-crescem-acima-da-media-mundial>

opened access to other markets that had a free trade agreement with the US, particularly Mexico and Central America. The plant was in the final phase of licensing to begin operations in 2017.

Magnamed's entrepreneurial activity, from the point of view of both market growth and social impact, has also won several recognitions:

2013 - Winner of the Inova Saúde 2013 award in the ABIMO category of Excellence in Innovation;

2014 - Featured as a Successful Entrepreneur in the PEGN Magazine;

2015 - Exports Honors Award;

2016 - Finalist of the Social Entrepreneur Award promoted by the newspaper *A Folha de São Paulo*.

Ueda and Suzuki shared the grand dream of establishing Magnamed as a Brazilian industry with global impact: "We want to be the [like] Embraer (the Brazilian aerospace company) of medical equipment, continue to produce high-tech medical [equipment] here in Brazil, and save as many lives as possible, as in the case of the first ventilator we developed, which helps to save 1 million lives a year."²⁰

Magnamed's Performance and Product Line

The slogan, "Intelligent Innovation for Life" expressed the vision of the founders of this Brazilian company that develops, manufactures, and markets hospital medical equipment for critical care, specializing in pulmonary ventilation. Their declared mission was to help save lives. The business conception took place within the scope of technological innovation that would contribute to the health sector.

To that end, the company made advances developing high-tech, excellent quality and efficient medical equipment. The following products made up its portfolio: the OxyMag, FlexiMag, and BabyMag pulmonary ventilators; the newly launched OxyMag Agile and FlexiMag Plus; and the Ventmeter test equipment. All the products encompassed the MagnaService specialized technical assistance, available throughout Brazil (see Exhibit 8).

The OxyMag and FlexiMag devices offered the best cost-benefit ratio on the market, according to private and public sector professionals. Magnamed's equipment helped address quality and supply issues: "In the hospital, ICU pulmonary ventilation is among the main equipment, and increased ICU automation enhances the mobility of care with portable equipment, while decreasing the idleness of fixed equipment, thereby increasing the capacity to meet demand," explained Gilberto Ribeiro.

Competitors offered different equipment for babies, children, and adults, while Magnamed products were adaptable. The market-leading German models were complicated to operate, and their battery only lasted for about 1.5 hours. Battery life was an impediment to emergency care in Brazil, where distances were often greater than in Europe, and many locations were remote and hard to reach (e.g., rural and forest areas).

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<https://endeavor.org.br/historia-de-empreendedores/historia-empreendedor-endeavor/magnamed-empreendedorismo-que-salva-vidas/>

The company had developed a modular manufacturing method which was unique in the sector. The usual interconnecting tubes were replaced with an integrated valve system, allowing the delivery of high-quality products with significant cost reduction. In addition to Magnamed's products being up to 30% cheaper than those of their competitors, they offered significant differentials, notably 50% longer battery life, 35% less weight, and 50% better space efficiency. Magnamed expected to launch seven new emergency room products in the coming five years, including vital signs monitors, lung ventilators, and anesthesia devices.²¹

According to Vox Capital's internal documents, Magnamed's social impact analysis was divided into two junctures: the first related to the impact of the company's activities, and the second to its R&D pipeline. The company's product portfolio had the potential to impact public health services (SUS), contributing to:

- Increased availability of ICU beds: bedside ventilators (FlexiMag) were essential to ensure the availability of beds installed in public hospitals. Magnamed's equipment was about 30% cheaper than imported equipment, had greater availability of spare parts and maintenance, and a much simpler user interface, allowing it to be operated by professionals with less training.
- Reducing deaths in ambulatory transport: OxyMag was lightweight and had a design that facilitates mobility, besides being the only portable ventilator that could be used for both adult and infant patients. Without it, hospitals would need ambulances equipped with two lung ventilation kits (adult and neonatal), or even two different types of ambulances.

In R&D, Magnamed's goal was to promote a change in processes in intensive care services. In each procedure or during intra-hospital transport, patients must be connected to and disconnected from a source of ventilation, which increases the risks of cross infection and length of hospital stay. The R&D pipeline and product portfolio improvements (Wi-Fi connection, connection with other sources of medical gases, efficiency of ventilation turbines, etc.) aimed to develop equipment to accompany patients throughout their hospitalization, thereby eliminating the need for changes of ventilation mode. With this, Magnamed wanted to contribute to increasing efficiency and availability of ICU beds, in addition to reducing hospitalization stays.

Evaluation of Impact Investment: Financial and Social Results of Magnamed

In terms of financial results, Magnamed reported a 158% increase in its gross operating profit over the last 5 years, comparing the performance in 2019 with 2015 (see Evolution of financial results in Exhibit 9). The main indicator used to evaluate its social impact was the estimated number of people served with Magnamed equipment. This number was obtained by estimating the service capacity of each piece of equipment, multiplied by the number of products sold. Based on this, the estimated number of patient beneficiaries was 1.9 million in 2019, of which 432,000 were from the public sector,

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<https://endeavor.org.br/empreendedores-endeavor/tatsuo-suzuki/>

740,000 from the private sector in Brazil, and 809,000 in other countries.²² According to Tatsuo Suzuki, Magnamed's founder²³,

Entrepreneurs believe that Magnamed is contributing to changing the world by exporting better, more reliable high-tech products, available to everyone. We help save lives with great honesty and ethics.

Jessica Rios joined Vox Capital's team in late 2016. She was aware of the importance for Vox Capital to evaluate the impact generated by the company's portfolio, and she was given the special task of reviewing and refining the impact assessment process, capitalizing on her previous experience in organizational learning processes. As part her work, Vox Capital developed its own impact outlook and a tool called ImpactMeter, which classified companies according to their impact measurement accuracy and their level of business model maturity (*see Exhibit 10*).

Across the portfolio, Magnamed showed the most mature business model and the greatest growth potential. However, it did not have an independent assessment mechanism for its social impact measurement, that is, the social impact generated by the company's actions that exceeded what would be expected, given the characteristics of the products, and, therefore, its contribution to social change and improvement of the quality of life of its beneficiaries.

Impact Investment Funds in Check

Gilberto Ribeiro wanted to discuss his own response to the conference moderator's question about Magnamed's internationalization with his partners. Although he was satisfied with his arguments to the audience, he believed that they were insufficient for strengthening the field of impact investment.

For Vox Capital, it was essential to find ways to clearly demonstrate the impact of the businesses in which it invested, not only to improve the management of its portfolio but also to prove its thesis as an impact investor, i.e., that businesses can promote social transformation while being profitable. Once it is able to position itself as an impact investment focusing on supporting businesses that help to achieve inclusive access and quality of essential services, the strategic goals and plans of its recipients should be driven by social impact. Otherwise, **should Vox continue** to invest in Magnamed? Why? What were Vox's options in the case of Magnamed? Ribeiro had the insight to quickly answer these questions with his partners and decide.

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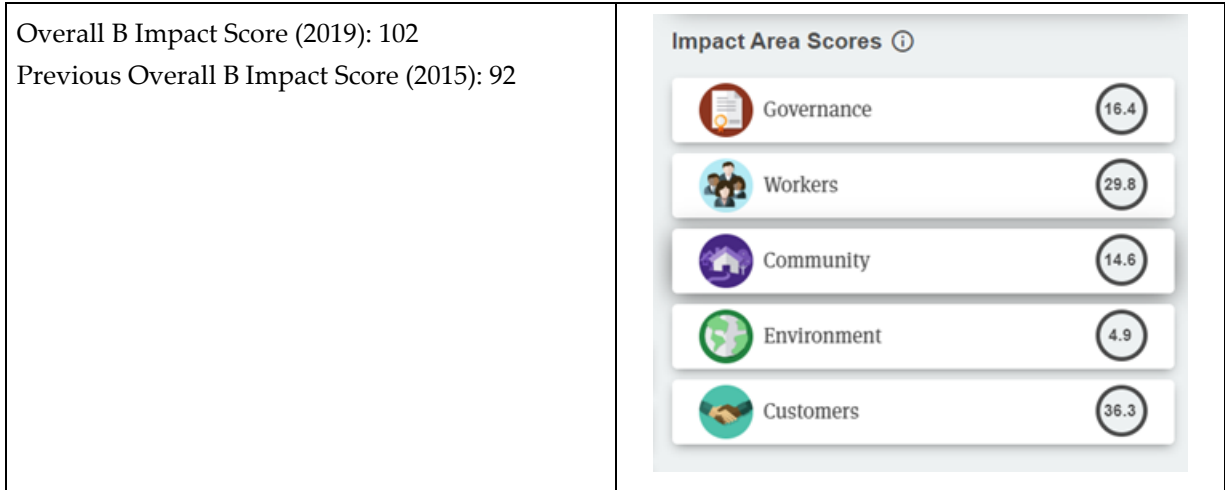
Vox Capital Social Impact Report 2019.

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<https://portal.apexbrasil.com.br/beinnovative-magmaned-a-empresa-que-transformou-o-setor-da-saude-do-brasil/>

Exhibit 1. B-Impact Report

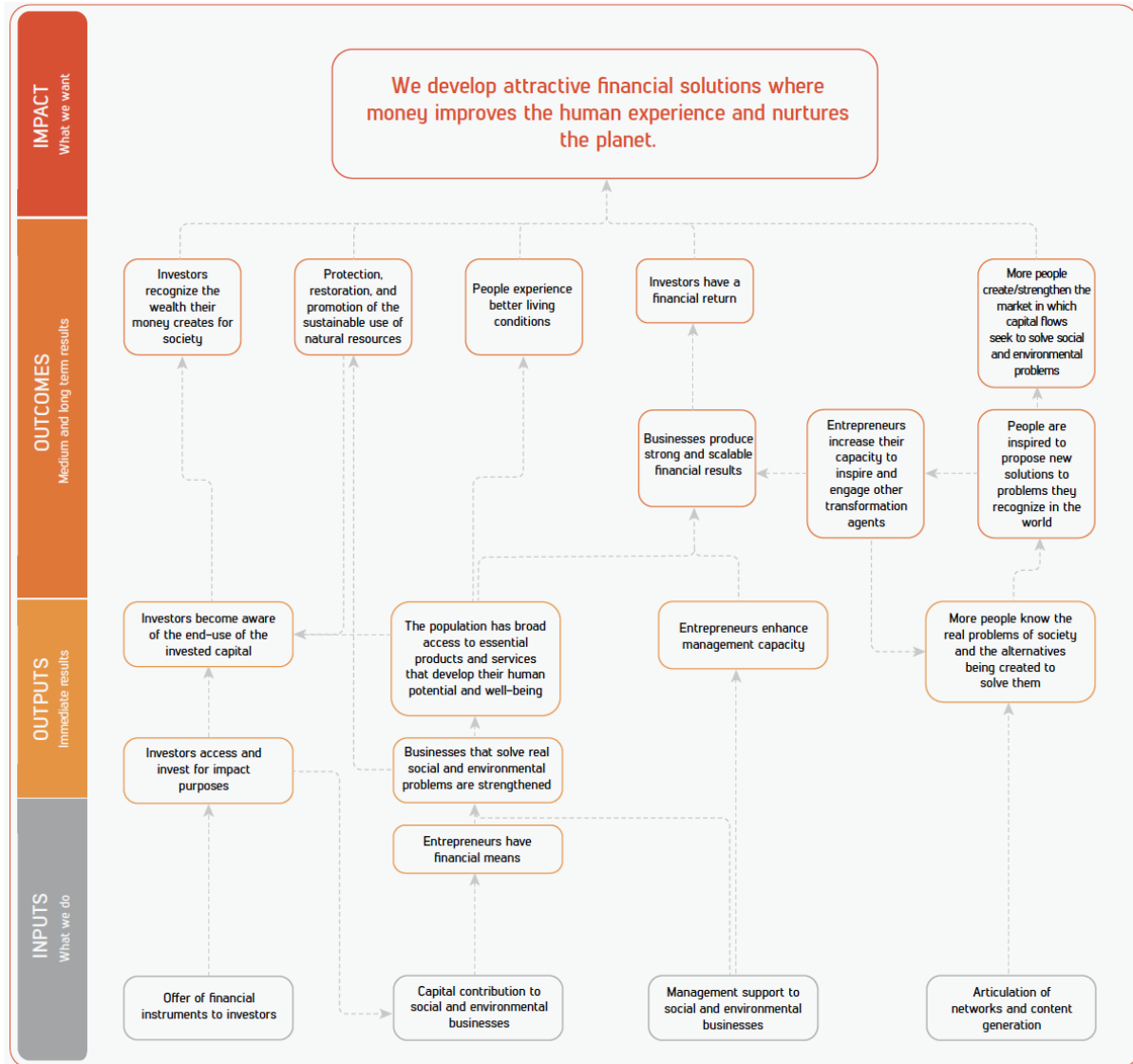
Vox Capital's B-Impact Report as a certified B Corporation²⁴



Vox Capital is a certified B Corp that seeks to evaluate a company's performance in the following dimensions: governance, workers, community, environment, and customers. These scores are provided by the B-Impact Assessment (BIA), the tool used by B-Lab to grant B Corp certification. The indicators are of two types: operational (referring to management practices, activities, and externalities), and those referring to the business model (which determines how social and/or environmental impact is generated). The BIA is reviewed biannually, and the data is fed into B-Analytics, the information platform available for investment funds as a benchmark for assessing social impact. More information about the B-Impact Assessment can be found at <https://bcorporation.net>.

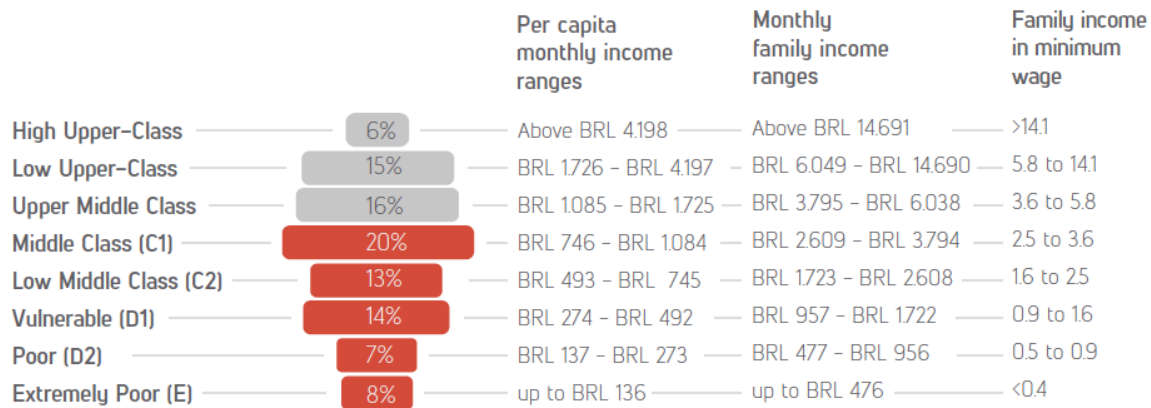
²⁴ Source: B Corporation Directory, available at <https://bcorporation.net/directory/vox-capital>

Exhibit 2. Vox Capital's Theory of Change²⁵



²⁵ Source: Vox Capital Social Impact Report 2019

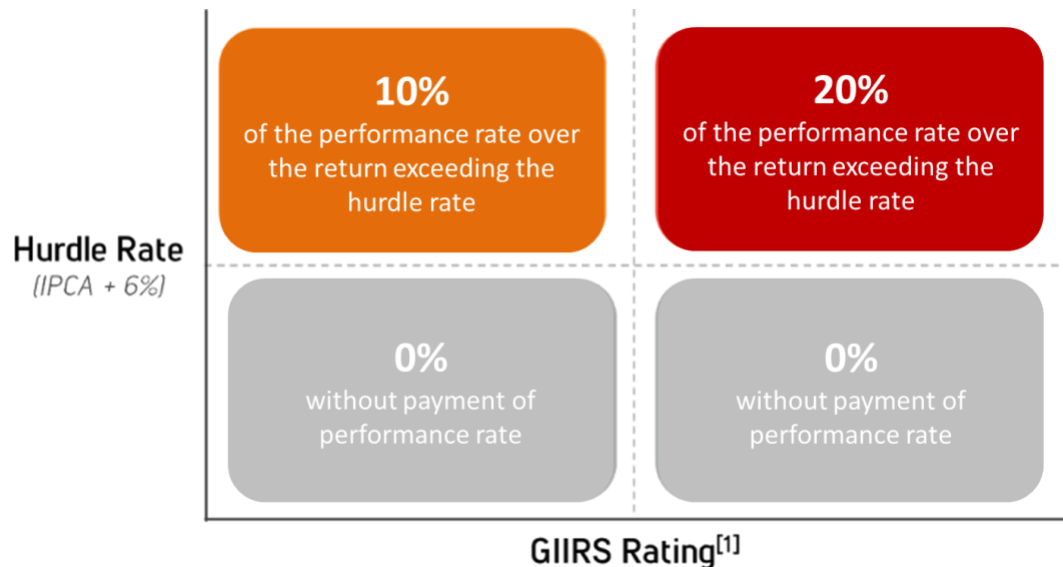
Exhibit 3. Distribution of Brazilian Families According to Their Income Range²⁶



Source: 1) Estimates of CDE Plan based on the PNAD 2019 (IBGE). Social class segmentation according to the Office of Strategic Affairs (SAE). Calculation based on the current minimum wage of R\$ 998.00 and to the size of the average Brazilian family of 3.5 people

²⁶ Source: Vox Capital Social Impact Report 2019

Exhibit 4. Vox Capital's Performance Rate²⁷



- Financial performance (10%) - once the fund's shareholders have received amounts corresponding to the invested capital corrected by the IPCA + 6 benchmark, Vox Capital will be eligible for 10% of the surplus;
- Social Impact (10%) - if the financial benchmark has been reached and the average fund score in the GIIRS Impact Fund Rating criterion is higher than the average score obtained by other companies evaluated by GIIRS, Vox Capital will be eligible to receive a further 10% of the excess amount.

Vox Capital's choice for the GIIRS was rooted by the fact that it was a global system that had standard evaluation methods and was conducted by third parties. GIIRS (Global Impact Investing Rating Systems) was developed by the B Lab to classify the impact performance of businesses and funds. Vox Capital is a "GIIRS Pioneer Fund" in its methodology since 2012. However, in 2018, the B Lab announced the discontinuity of the fund rating.

IPCA: Broad National Consumer Price Index

²⁷ Source: Vox Capital Blog, available at <https://medium.com/@voxcapital/impacto-para-n%C3%B3s-%C3%A9-coisa-s%C3%A9ria-a350923f33d6>

Exhibit 5. Magnamed Sales Profile²⁸

	2014	2015	2016	2017	2018	2019
Products (Qty)	734	691	1363	1276	1361	1692
National market - private	325	179	494	493	575	666
Transport	229	119	278	287	339	400
ICU	96	60	216	206	236	266
National market - public	124	163	381	200	319	221
Transport	79	104	282	81	280	190
ICU	45	59	99	119	39	31
Export market	285	349	488	583	467	805

Exhibit 6. 2017 Benchmarking Public Procurement – Brazil²⁹

Indicator	Score	Benchmark	Country
Needs assessment, call for tender, and bid preparation	68	98	Canada
Bid submission	82	100	Ecuador, Peru
Bid opening, evaluation and award	50	79	Costa Rica
Content and management of procurement contract	73	91	Kazakhstan
Performance guarantee	74	94	Bulgaria, Senegal
Payment of suppliers	57	100	United States

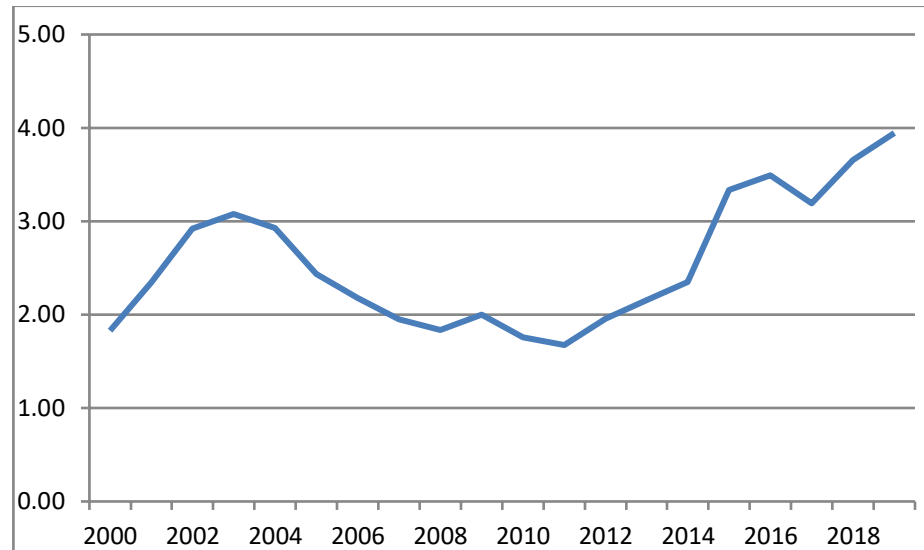
* The economies at the top of the range (with scores approaching 100) are considered to have a regulatory framework that closely aligns with internationally recognized good practices, whereas the economies at the bottom of the range (with scores closer to 0) have significant room for improvement in the particular area measured.

²⁸ Source: Magnamed's internal documents and Vox Capital Social Impact Report 2019

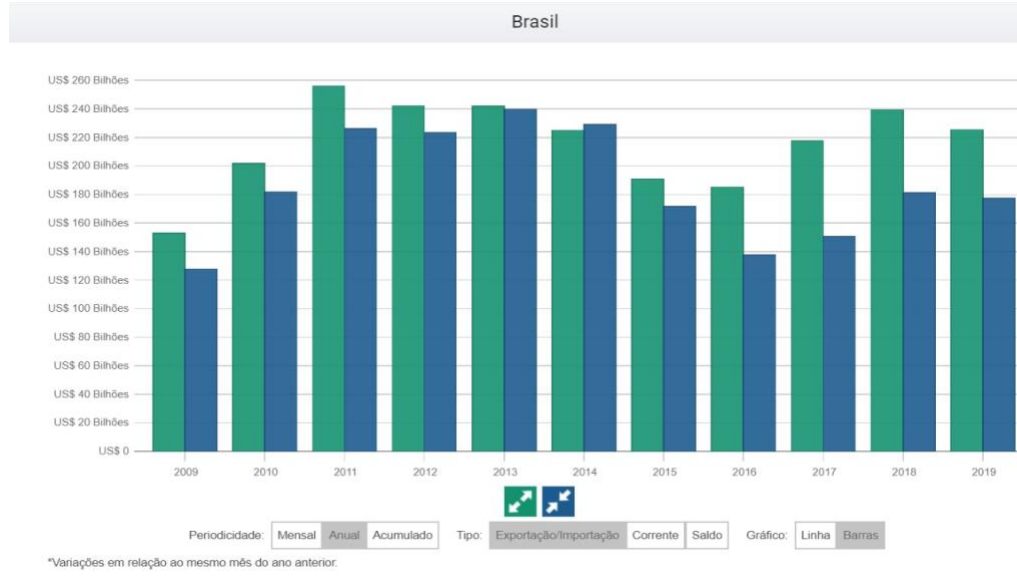
²⁹ Source: The World Bank, 2017

Exhibit 7. Brazilian Exports

Currency Exchange rate BRL / USD³⁰



Brazil's Exports and Imports Volume³¹



³⁰ Source: IPEA, <http://www.ipeadata.gov.br/ExibeSerie.aspx?serid=31924>

³¹ Source: <http://comexstat.mdic.gov.br/pt/comex-vis>

Exhibit 8. Magnamed's Product Portfolio**Product Line Specifications**

Line	Product	Launch year	Specifications
OxyMag Transport and Emergency Ventilator	OxyMag Flagship product	2011	<p>The company's first pulmonary ventilator, launched in 2011, was developed with support from Fapesp's program to foster innovation for SMEs.</p> <p>It is a flexible portable lung ventilator capable of ventilating patients ranging from newborns to adults, without the need for complex programming, in a mobile ICU. OxyMag is used by pulmonary nurses and physiotherapists who intubate the patient under the supervision of a physician in emergency situations with risk of death in mobile units.</p> <p>To use OxyMag, it is simply necessary to select one of three buttons—illustrated with images of a baby, a child, or an adult—to begin lung ventilation. If emergency care is performed, a finer adjustment of all parameters—oxygen concentration (35% to 100%), frequency, flow and pressure in the patient's respiratory circuit—can be made, besides the selection of the type of ventilation most appropriate for each case (controlled, intermittent synchronous mandatory volume or pressure etc.).</p>
	OxyMag Agile	2015	Oxymag Agile is easy to handle using color touch screen, a battery with over 3 hours of autonomy, and is light weight (only 2.7 kg). In addition to treating neonatal, pediatric, and adult patients, OxyMag Agile has the following ventilatory modules: VCV (can be assisted); PCV (can be assisted); PLV; V-SIMV + PS; P-SIMV + PS; DualPAP/APRV; CPAP/PSV e NIV.
ICU Ventilators	Babymag	2013	Babymag ICU Ventilators For Neonatal UTI, released in 2013.
	FlexiMag	2013	For ICUs, adaptable for infants, children, and adults. Developed in 2013, it signaled the entry of Magnamed equipment in the ICU market. Benefits: lower total purchasing cost.
	FlexiMag Plus	2015	High-tech ICU Lung Ventilator dedicated to mechanical ventilation for neonatal, child or adult patients. The Fleximag Plus Lung Ventilator offers high-performance mechanical lung ventilation, both invasive and non-invasive. Its monitoring system is comprehensive and has effective treatment functions.
Ventilator Analyser	Ventmeter	2008	First product of the company, launched in 2008. Easy to operate pulmonary ventilator analyzer to ensure the reliability and safety of the devices.

Exhibit 9. Magnamed Financial Reports³²

STATEMENT OF RESULTS	2014	2015	2016	2017	2018	2019
Gross Operating Revenue	18,097	19,312	36,460	32,392	35,916	45,991
Domestic market - private	9,276	5,544	14,510	12,947	17,518	19,324
Domestic market - public	4,170	5,821	12,158	7,596	8,893	9,021
Export Market	4,577	7,891	9,494	11,703	10,258	16,727
Net Revenue	14,212	15,070	27,742	27,155	29,161	38,813

Amounts in thousands BRL (Brazilian Real)

STATEMENT OF RESULTS	2014	2015	2016	2017	2018	2019
Gross Operating Revenue	7.701	5.800	10.447	10.154	9.840	11.643
Domestic market - private	3.947	1.665	4.157	4.058	4.799	4.892
Domestic market - public	1.775	1.748	3.484	2.381	2.436	2.284
Export Market	1.948	2.370	2.720	3.669	2.810	4.235
Net Revenue	6.048	4.526	7.949	8.513	7.989	9.826

Amounts in USD thousands, **calculated by** the currency rate **for each year**

³² Source: Magnamed's internal documents (2020)

Exhibit 10. Impact Meter of Vox Capital Portfolio³³



The ImpactMeter is a tool designed by Vox Capital to classify companies on the impact measurement accuracy level versus the business model maturity level.

Vox Capital's portfolio of health services in 2019 included:

- Magnamed
- Tem: invested in 2015, it is a health-tech company offering a pre-paid card for health services in São Paulo. It was the first divestiture of Vox Capital, which sold its stake in June 2018.
- ToLife: investment by Vox in February 2014, it develops technological solutions to reduce the time for emergency care in healthcare units.
- ProRadis: investment by Vox in June 2015, it develops software specializing in the management and operation of Radiology clinics.
- Bem.care: investment by Vox in December 2019, it is a platform offering affordable online services.

³³ Source: Vox Capital Social Impact Report, 2019