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**TESIS PARA OBTENER EL GRADO DE MAESTRA EN ADMINISTRACIÓN
ESTRATÉGICA DE EMPRESAS OTORGADO POR LA PONTIFICIA
UNIVERSIDAD CATÓLICA DEL PERÚ**

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Dedications

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Executive Summary

Sanilab International SAC, a social enterprise, has developed a dry toilet system in collaboration with local communities in Peru to enhance sanitation and improve the quality of life. Their product lines include SaniSystems (dry toilets) and Fortyplant (fertilizer) that converts human waste into biofertilizers.

An analysis by the company highlighted a growing demand for dry toilets in underserved Peruvian communities; however internal challenges stemming from the organizational structure and limited finances have prevented the company from capitalizing on this demand. Problems include a lack of market access and specific focus, minimal sales, established competitors in the market, and operational and organizational inefficiencies.

The proposed solution is to shift the focus solely toward a more social direction, aligning with its mission to improve sanitation for underserved communities. Implementation includes refining the strategy, forming partnerships, project execution, and growth with a focus on assembling the right team, including individuals with a background in business. Key Performance Indicators (KPIs) will monitor environmental, social, organizational, and financial impact, gauging the effectiveness of Sanilab's future projects.

Abstract

Sanilab International SAC, una empresa social, ha desarrollado un sistema de inodoros secos en colaboración con las comunidades locales en Perú para mejorar la saneamiento y la calidad de vida. Sus líneas de productos incluyen SaniSystems (inodoros secos) y Fortyplant (fertilizante) que convierten los desechos humanos en biofertilizantes.

Un análisis resaltó una creciente demanda de inodoros secos en comunidades peruanas desatendidas, pero también reveló desafíos internos relacionados con la estructura organizativa y la falta de recursos financieros. Los problemas incluyen la falta de acceso al mercado y un enfoque específico, además de ventas mínimas, la existencia de competidores establecidos en el mercado, e ineficiencias operativas y organizativas.

La solución propuesta es cambiar el enfoque únicamente hacia una dirección más social, alineándose con su misión de mejorar el saneamiento en comunidades desatendidas. La implementación incluye refinar la estrategia, formar alianzas, ejecutar proyectos y crecer enfocándose en reunir al equipo adecuado, incluyendo a personas con experiencia en negocios. Los Indicadores Clave de Desempeño (KPIs) supervisarán el impacto ambiental, social, organizativo y financiero, evaluando la efectividad de los futuros proyectos de Sanilab.

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Chapter I: General Situation of the Organization

1.1. Presentation of the Organization

Sanilab is a social start-up that develops ergonomic dry toilets to combat sanitation and soil contamination problems. Sanilab's mission is to take a leading role in driving global social, economic, and environmental change, beginning with the eradication of poverty and vulnerability disparities in communities through collaborative technological innovation and cutting-edge research (Sanilab, n.d.a). This is in line with the UN Sustainable Development Goals (SDGs); declaring the need to “achieve access to adequate and equitable sanitation and hygiene for all and end open defecation” (UN General Assembly, p.15, 2015).

1.1.1. History

Sanilab was founded by Raúl Muñoz who pursued his studies in industrial design at the Pontifical Catholic University of Peru (PUCP) and later became a professor, teaching innovation courses at the same university (Muñoz, personal communication, July 11, 2023).

His business idea originated in 2015 during a trip to Africa, where he received training from the International Massachusetts Institute of Technology Network in the USA. This experience impacted his professional trajectory, inspiring him to co-create various technological projects. Upon his return to Lima, Peru, Raúl identified a community to work with collaboratively, aiming to develop an improvement plan. It became evident that the lack of sanitation and access to clean water was the most critical issue affecting their daily lives. That is, why in 2017, he founded the start-up Sanilab (Muñoz, personal communication, July 11, 2023).

1.1.2. The Business Idea

The company operates through two primary business lines: SaniSystem, which creates ecological dry toilets, and Fortyplant, which produces liquid biofertilizers. The latter is manufactured using waste collected from the dry toilets, reflecting Sanilab's commitment to a circular economy. This economic model seeks to minimize waste by maximizing resource utilization through reuse, repair, and recycling. Moreover, it advocates converting production waste into raw materials for other processes, thereby extending the useful life of materials (Sanilab, n.d.b). This idea received recognition as the winning project in one of Peru's most significant scientific fairs, organized by CONCYTEC and CIENCIACTIVA. During this event, various Peruvian scientists presented proposals to address the country's problems and needs (Sanilab, n.d.a).

SaniSystem offers an ecological sanitation system that addresses the lack of access to sanitation in vulnerable communities. This system saves up to 70% of water, eliminates sources of infection, prevents water and soil contamination, reduces anemia, positively impacts education, and reduces vulnerability for women in these communities. (Sanilab, n.d.a). The design of the dry toilets was co-created with the Pachacamac community, ensuring that the product meets their specific ergonomic needs but can also be adapted to cater to the needs in other areas in Peru (R. Muñoz, personal communication, July 11, 2023).

Fortyplant, on the other hand, originates from the SaniSystem. Its primary raw material consists of human waste collected from the dry toilets provided by SaniSystem after 15 days. The resulting liquid biofertilizer proves to be more effective than generic alternatives and is entirely chemical-free when sold by Sanilab in Lima (Sanilab, n.d.c).

1.1.3. Company's strategic goals

Sanilab has completed one project in the North of Peru, funded by a German NPO. The company wants to grow and therefore needs to sell more of its products. As the primary

goal is to help local communities, they would like to receive ongoing funding from a foreign organization to support the local communities to buy the dry toilets. Currently, the communities need to transport the toilet themselves from Lima, and this adds to the cost of the project. Also, Sanilab has started conversations with mining companies, as they need toilets and can use the fertilizer to restore the ground after mining has been done. (Muñoz, personal communication, July 11, 2023). Focusing on finding a smart and reasonable market for their product will be of utmost strategic importance in order for them to establish a functioning business model.

1.1.4. Competitive Advantage

Sanilab's most significant competitive advantage lies in its new human waste-to-fertilizer conversion process. While other companies in Peru offer dry toilets, Sanilab distinguishes itself by customizing its toilets to accommodate challenging terrains, such as mining areas. Moreover, the company produces both liquid and solid fertilizers, providing a comprehensive and environmentally sustainable solution.

By carefully considering the entire process, Sanilab goes beyond waste management and creates an entirely new product from feces, which positively impacts various sustainable development goals. In the future, with further advancements, there is potential to explore the use of human fertilizer for food production, as indicated by previous studies (Krause, Häfner, Augustin, & Udert, 2021). Embracing this concept could open up a new market for Sanilab, particularly in water-scarce regions of Peru, where innovative solutions for agriculture are in high demand.

1.2. Internal Analysis: Porter's Five Forces

Porter's Five Forces is a strategic tool used to evaluate the industry's attractiveness and competitiveness (Porter, 1979). We conducted an analysis for Sanilab to understand the specific sector forces in the dry toilet and fertilizer industry in Peru, as depicted in Figure 1.

1.2.1. Threat of New Entrants

The concept of dry toilets is not new. Several companies offer their products, and they can be shipped worldwide. New competitors entering the market will encounter a barrier in the form of regulations imposed by public entities, particularly regarding sanitation, governed by the Superintendencia Nacional de Servicios de Saneamiento (Sunass). Sunass's task is to ensure the quality of sanitation services in both rural and urban areas, with a primary objective of promoting public health and preserving the environment (Carroll, 2017). These regulations and a relatively easy access to distribution channels place the threat of new entrants in Peru as medium.

1.2.2. Bargaining Power of Customers

The customers targeted by SaniSystem are national and international non-profit organizations as well as mining companies and subcontractors of mining companies. The bargaining power of these customers is high due to a variety of products available for companies to choose from. With their strong bargaining power, they can demand lower prices or higher quality products, squeezing profit margins for businesses in the industry. Additionally, SaniSystem is a small player already several years in the market, with competition holding a considerable market share.

1.2.3. Bargaining Power of Suppliers

The company's primary suppliers are the manufacturers of the materials used in producing dry toilets. The suppliers' bargaining power is low due to the abundance of raw material suppliers in the market. The company can easily switch to another supplier if they do not meet the required quality or price standards. However, when it comes to the forklifts responsible for the logistics of solid waste collection, their bargaining power is high. These specialized trucks with specific certifications are essential for the waste collection process (Muñoz, personal communication, July 11, 2023).

1.2.4. Threat of Substitute Products

The primary substitute products for SaniSystem are conventional sanitation systems, such as Hydraulic Flush Systems that utilize water to flush waste to a storage or treatment area. Pit Latrines, found in rural areas, involves storing human excreta and urine in deep holes in the ground. Septic Tanks, used in homes with water connections and permeable soil, separate domestic wastewater to reduce environmental impact. Ventilated Improved Pit Latrines are similar to pit latrines but with a covered hole and protective structure. Biodigesters function as self-cleaning wastewater treatment equipment, resembling septic tanks. Lastly, Portable Toilets (Disal) offer waste storage in portable bathrooms (Navarro, 1994).

Despite these substitutes, SaniSystem holds significant advantages, including water conservation, reduced environmental impact through waste-to-fertilizer conversion, and suitability for regions with limited water and sewage infrastructure. These unique features distinguish it from conventional sanitation systems; therefore, the threat of substitutes is medium as they are alternatives, but these alternatives do not have the listed advantages such as the waste-to-fertilizer conversion for plants (Sanilab, n.d.a).

1.2.5. Intensity of Competitive Rivalry

SaniSystem's primary competitors are Sanima (NPO that works in urban areas), Agua Ecosan, Rotaria del Perú SAC, and Arrebol Peru SAC, all of which provide dry toilet technology. However, the main competitive advantage of Sanilab is the waste-to-fertilizer conversion, which most competitors do not offer. This, while the intensity of competitive rivalry for dry toilets in Peru is high, including the fertilizer there is little competition so far on the Peruvian market for the waste to fertilizer conversion (Muñoz, personal communication, July 11, 2023).

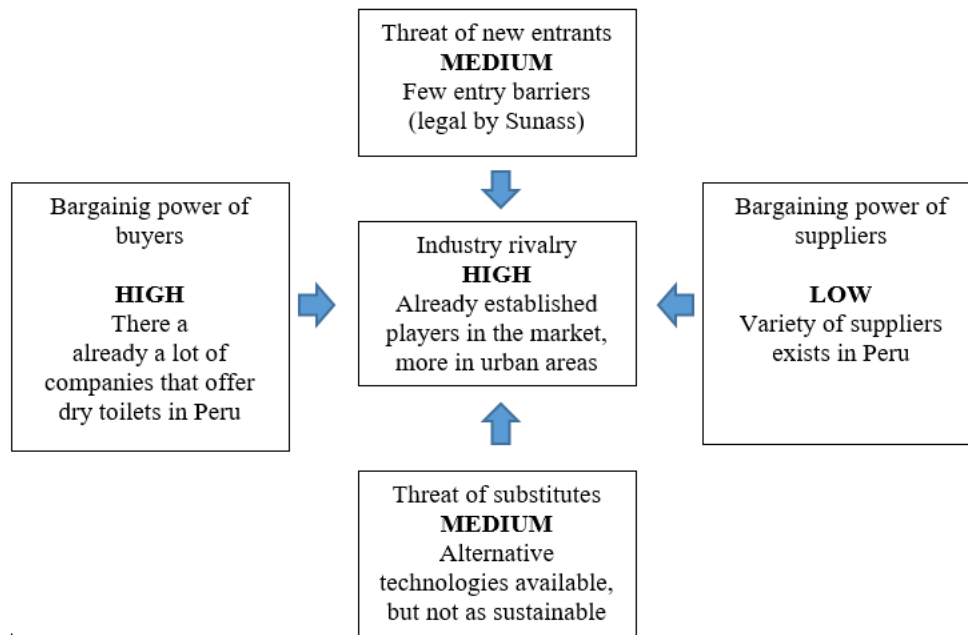


Figure 1. Porters five forces interaction for the dry toilet industry in Peru. Adapted from “The five competitive forces that shape strategy”, by M. Porter, 2008, Harvard Business Review.

1.3. External Analysis (PESTE) – Opportunities and Threats

The PESTE framework is a business tool utilized to assess the external environment in which a start-up like Sanilab, operates. This analysis helps to understand the external context by evaluating Political, Economic, Social, Technological, and Environmental factors in detail (Rastogi & Trivedi, 2016).

1.3.1. Political Factors

Peru's political landscape is known for undergoing change and impacting foreign investors, particularly concerning corruption cases involving high-ranking officials. However, the overall business climate remains stable regarding policies, regulations, and taxation. The situation for startups in Peru presents both opportunities and challenges. The government expresses support for entrepreneurship and innovation, offering programs,

incubators, accelerators, and increased funding access (Villaran, n.d.). Despite this, startups face bureaucracy, limited capital, and political instability. Challenges also include skilled talent availability and infrastructure. Nonetheless, Peru's entrepreneurial ecosystem displays growth potential, attracting technology-driven ventures (Black, n.d.). Successful startups need to be proactive, adaptable, and well-informed to navigate the local business environment effectively.

1.3.2. Economic Factors

According to the World Bank (2023), approximately 700,000 Peruvians have shifted from the middle class to vulnerable situations, and another 700,000 have fallen into poverty in the past year. Furthermore, in 2020, 8.8% of Peruvians lacked access to clean drinking water, and 23.2% lacked access to proper sanitation facilities (World Bank, 2023). These disparities in sanitation services are more pronounced between urban and rural areas, where populations with lower purchasing power are disproportionately affected.

On the other hand, Peru presents opportunities for startups due to its growing economy, improved funding access, and favorable trade policies. However, startups should remain vigilant regarding currency fluctuations, inflation, and potential challenges related to infrastructure, labor market dynamics, and government policies (Black, n.d.).

1.3.3. Technological Factors

Technological factors play a crucial role in the success of Sanilab, an innovation-driven start-up. With a focus on human feces fertilizer, advancements in technology and research are vital to uncover new untapped markets. While Peru may not be leading in global technology innovation, it is steadily harnessing technology for economic and societal progress (Black, n.d.). As the technological landscape in Peru evolves, it's essential for Sanilab to stay updated on the latest developments and initiatives in the tech sector to

maximize its potential in the market. Embracing innovation will be key to Sanilab's growth and success in the Peruvian ecosystem (Muñoz, personal communication, July 11, 2023).

1.3.4. Social Factors

Dry toilets, also known as composting toilets, have been gaining attention in Peru as an eco-friendly and sustainable sanitation solution. They are considered by some an environmentally friendly alternative to traditional flush toilets since they don't require water for flushing. Dry toilets find applications in rural and remote areas with limited access to water and sewage systems, reducing the environmental impact and promoting sustainability (Oswald & Hoffmann, 2007). In Peru, some eco-lodges and sustainable tourism ventures have adopted dry toilets to align with their eco-conscious approach, attracting environmentally conscious travelers. Cultural attitudes, government initiatives, and challenges like initial costs and cultural perceptions can influence their adoption process (Sanilab, n.d.b).

1.3.5. Environmental Factors

Climate change, droughts, and resource scarcity are driving the need for sustainable solutions, benefiting Sanilab with their resource-friendly biofertilizer for plants. The global water crisis affects multiple sectors, with around 2.3 billion people in water-stressed countries (FAO, 2023). Peru faces extreme water stress in the Chillón-Rímac-Lurín basin, impacting 32% of the population with access to only 0.7% of the country's water resources (Ceplan, 2020). To address resource conservation, organizations are increasingly adopting sustainable practices, such as optimizing water and energy use and considering social and environmental factors in their strategies.

1.3.6. Conclusion Opportunities and Threats

Sanilab is a start-up in Peru that focuses on eco-friendly sanitation solutions, particularly utilizing human feces as biofertilizer for plants. The company benefits from a growing market demand for sustainable practices. However, it faces challenges such as limited resources, cultural perceptions surrounding waste disposal, and a competitive market. Despite these obstacles, Sanilab's environmentally conscious approach and commitment to addressing water scarcity and resource conservation position it as a promising start in the ecological sanitation sector. To succeed, the company needs to leverage its strengths, differentiate itself, and remain adaptable to successfully enter the Peruvian market.

1.4. Internal Analysis (AMOFHIT) – Strengths and Weaknesses

To identify the strengths and weaknesses of Sanilab, an in-depth internal investigation was undertaken utilizing the AMOFHIT framework. This approach aimed to gain a comprehensive understanding of the company's focal points for development and areas that require enhancement. The analysis consists of six key dimensions of the organization: (a) administration and management, (b) marketing and sales, (c) operations, (d) finance, (e) human resources, and (f) information and technology. By assessing and analyzing these aspects, appropriate recommendations were formulated to enhance the company's structure where needed.

1.4.1. Administration and management

Sanilab's administration is overseen by Raul Muñoz, who handles negotiations with clients and potential customers. The organization is a social start-up located in Miraflores, Lima, Peru. It operates on a business-to-business (B2B) strategy, collaborating with potential investors and mining companies. Additionally, the organization is actively seeking angel investors who can contribute valuable networks and connections to help achieve its mission of developing technological solutions in sanitation. Moreover, it aims to foster lasting

partnerships with communities, companies, and international organizations to support their initiatives.

Although the original business model revolves around addressing sanitation systems and soil contamination issues in low-income communities through dry-toilet initiatives, the organization is open to considering a business-to-customer (B2C) model, an alternative business plan to guide its future strategy in order to adapt to evolving circumstances and explore new avenues for fulfilling its mission.

Given the single-person administrative structure, it becomes evident that the company's administration needs more depth. Therefore, Sanilab should prioritize the development of an effective administrative strategy to enhance its operations.

1.4.2. Marketing and sales

In the current digital age, the prominence of digital marketing has grown significantly, making it imperative for companies to establish a strong social media presence. Sanilab, too, recognizes the significance of online platforms like Facebook, Instagram, Twitter, and LinkedIn to promote its initiatives. Through these channels, the company showcases its mission to the community, emphasizing its products, such as dry toilets and biofertilizers, and highlighting its achievements to build credibility. Utilizing these marketing platforms allows Sanilab to reach potential clients and investors, thereby adding value to the company. In addition to digital marketing, word-of-mouth promotion also plays a pivotal role in spreading awareness about the company's endeavors within the community.

Due to the size of the company, Raúl and Sanilab's team manages the marketing of the product to reduce costs. Currently, the main focus of Sanilab is to get more invitations to events and get more contacts and networks through sending notes aside from the active social media accounts mentioned. Also, they reach to television and written press for further dissemination of its initiatives (Sanilab, n.d.d). Sanilab focus on attracting new customers to

position the brand as a technical solution to the sanitation problem of people and to improve the quality of life of Peruvian families through waste transformation. Moreover, the company's goal is to be known as the sanitation of the future that can positively impact health and the environment (Sanilab, n.d.d). To achieve these goals, Sanilab created a marketing plan with specific objectives to position its brand listed in Table 1. Measurement indicators are also identified to validate if the objectives are met.

Table 1.

Marketing Plan

Marketing Objectives	Short term (<1 year)	Medium term (2-3 years)	Long term (4-5 years)	Measurement indicators
Brand positioning	Locally	National level	Latin American level	Number of people who know the SANILAB brand
Attracting new customers	5 new customers	8 new customers for 2nd and 8th year, respectively	12 new customers every year	New clients per year who hire the services.
Customer satisfaction	70% of customers satisfied with services	80% of customers satisfied with services	85% of customers	Percentage of satisfaction in online surveys customer satisfaction

Taken from Sanilab International SAC, Company Information.

Analyzing the Sanilab marketing mix, there are evident issues in place in the company.

Product. The SaniSystem dry toilet and the Fortyplant biofertilizer are the company's two main product lines. These services are designed for use with clients in low-income communities and its biofertilizers are commercially used.

Price. The SaniSystem dry toilet's cost structure is dependent on three separate phases and is subject to customization depending on the particular community it is intended to serve. The company's internal system yielded a quote that is specific to a scope that can accommodate 60 households. The lack of product pricing information on the company's website and social media platforms, which hinders transparent accessibility for potential customers, is currently a problem. On the other hand, the Fortyplant biofertilizer can be bought separately on the market. The consulting team, however, had trouble determining the exact price range for this particular product.

Table 2.

SaniSystem Pricing Scheme

Phase	Components	Prices (S/)
Phase I (4 weeks)	Study of co-creation and excellence Operative	30,000.00
Phase II (4 weeks)	Installation of the set of portable sanitary equipment and construction of the CADR, as well as provision of pick-up transport	96,000.00
Phase III (more than 12 weeks)	Technological training, monitoring and quality control	11,000.00
		137,000.00

Taken from Sanilab International SAC, Company Information. *Marketing Plan*

Place. SaniSystem is only made available to communities and investors that are interested in buying the product; the company does not sell it through other channels. The company's Facebook and Instagram pages are the only places where promotional material for the dry toilet is disseminated, ensuring visibility on both networks. On the other hand, Fortyplant is directly offered to customers. Additionally, the product is offered for sale on

well-known online stores like Sodimac, making it easier for buyers to place purchases (Sodimac, n.d.).

Promotion. Sanilab's two product lines do not currently have an active promotional plan in place. Nevertheless, it's possible that certain external websites will provide discounted rates for these goods. It's crucial to remember, however, that these promotions are not sponsored or initiated by the company itself. While Sanilab has a clear objective of co-creating low-cost technologies for the community, they need help identifying their target market accurately. Despite having products available in the market, the company has yet to align its marketing efforts to reach the right market effectively.

1.4.3. Operations and logistics

As an integral part of its mission, Sanilab has developed a portable and waterless toilet. Through this technological innovation, the company aims to support low-income communities by providing an improved sanitation solution and simultaneously employing a circular approach to transform human waste, thereby reducing soil and water contamination caused by conventional water-based toilets (Sanilab, n.d.d). This initiative demonstrates the company's dedication to creating a positive social impact while capitalizing on the potential for financial gains presented by this innovative effort.

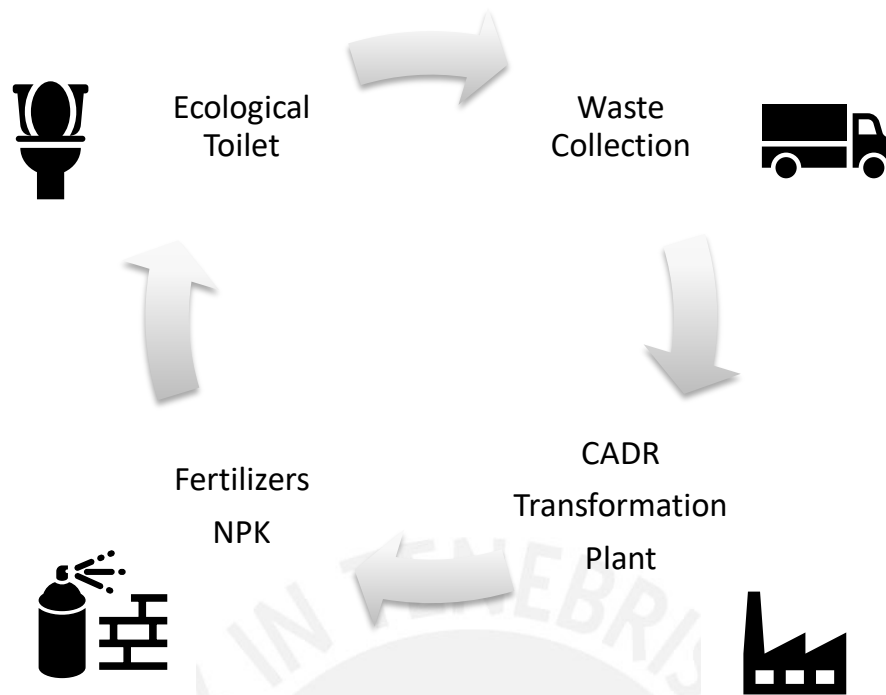


Figure 2. How Sanilab produced its product
 Adopted from Sanilab International SAC, Company Information. *Portable Ecological Sanitation – Without Waster, to face climate change.*

A crucial component of this fundamental process involves converting human waste into a valuable biofertilizer with a particular emphasis on transforming urine, which increases the product value and sales potential. External contractors are responsible for collecting human waste from communities and transporting it to a transformation plant every week for conversion into fertilizer, which is subsequently sold to interested parties (Sanilab, n.d. Company Information, Competitive Advantage). Raúl Muñoz, who undertakes supervisory responsibilities and manages negotiations with community members, is in charge of this crucial area of operation. Therefore this key position is vital to the successful execution of the company's mission and objectives.

1.4.4. Finance

Sanilab's finance and accounting department is small because of financial constraints and difficulty in finding appropriate candidates. Raúl, who is the owner and also the CEO, and his finance department is responsible for bookkeeping transactions related to the

business. All important records are kept in the company's internal information system to track, review and analyze present and past business transactions.

1.4.5. Human Resource

Human resources play an integral part in organizations as critical stakeholders contributing to the strategic approach and organizational advantage. Raúl Muñoz, the chief executive officer, is not only the company's principal actor but also the director of the finance and administration departments. In addition to him, two additional staff members are responsible for documentation and research and development.

Regarding the human resource network, specifically staffing, Raul enlists the assistance of on-call volunteers who voluntarily participate in outreach programs and assist with the delivery of products to the company's beneficiaries. The company is also constantly hiring to fill technical support positions but there are still open positions on the business side of the company.

1.4.6. Information and technology

Sanilab currently lacks a centralized software system to house data and information pertaining to the company and its clients. Instead, they rely on Google Drive as a means of storing and maintaining their database. The CEO of Sanilab and his team have access to this primary drive and are responsible for managing the records. Given their status as a start-up, the company faces challenges in hiring additional personnel to oversee the information system, as it entails extra costs. Consequently, they opt to handle the task independently, without the assistance of IT professionals.

In light of this approach, reliable internet connectivity becomes essential for effectively implementing and monitoring their data management strategy. It is important to ensure seamless operations and proper management of their information system.

1.5. Conclusions

After conducting a comprehensive analysis of Sanilab's external environment using Porter's Five Forces and the PESTE framework, the company's opportunities and threats can be summarized. In addition, by employing the AMOFHIT framework for internal evaluation, the consulting team is able to identify specific strengths and weaknesses that require careful consideration.

Sanilab is a company whose primary objective is to provide secure and accessible sanitation solutions to low-income communities and potentially mining companies, by means of waterless portable dry toilets. Additionally, the organization promotes ecological sanitation systems, which contribute to water conservation, enhanced health, and the combating of soil contamination prevalent in traditional pit latrines used in rural Peru. The company's primary objective focuses on Clean Water and Sanitation (SDG Goals 6), which is consistent with its mission since its inception, which emphasizes significant social and environmental impact. However, the internal analysis conducted revealed that the lack of available resources, including human resources, networks, and investors, hinders the organization's ability to pursue its social and environmental initiatives continuously. In addition, an underdeveloped business model and strategy contribute to the company's inability to compete with other market participants. Sanilab must adopt alternative strategic approaches and pursue potential investors and partners, to strengthen its business in order to overcome these challenges.

In addition, the external analysis utilizing PESTE and Porter's Five Forces revealed growth opportunities for Sanilab's products and services due to the high demand for accessible sanitation facilities and emerging markets for portable dry toilets, such as eco-lodges promoting ecotourism. As a water-scarce nation in South America, Sanilab has the opportunity to expand its reach to rural areas that are in desperate need of its solutions.

However, bureaucracy limits the company's mission by making it difficult to obtain licenses and permits, limiting its access to funding and connections, and slowing the growth of its capital and infrastructure. The country's political instability and corruption also contribute to the complexity of its business environment. Despite these obstacles, technological innovation offers significant domestic and international growth potential, highlighting the importance of building the right networks and gaining access to resources to advance the company's initiatives and fulfill its mission of promoting ecological sanitation systems that convert human waste into biofertilizer, thereby contributing to circularity and environmental sustainability (Black, n.d.)

1.5.1. Strengths, Opportunities, Weaknesses, and Threats

Table 3.

SWOT Identified

Opportunities	Threats
<ul style="list-style-type: none"> • Innovation support from government - increased funding access for technological innovation • Tech start-up growth potential • Lack of access to sanitation facilities - 23.2% (World Bank, 2023) • Ecotourism and sustainable tourism - eco-lodges • Water-stressed countries, including Peru 	<ul style="list-style-type: none"> • Start-up bureaucracy including licensing • Political instability and corruption • Limited country infrastructure • Poverty • High inflation rate - 8.3% (World Bank, 2022)
Strengths	Weaknesses
<ul style="list-style-type: none"> • There is a need for the product – low-income communities in Peru • Strong social and environmental impacts • Clear mission statement • A good product with potential for growth 	<ul style="list-style-type: none"> • Lack of human resource • There is no concrete business model structure therefore target market is unclear • Lack of resources – funds, manufacturing sites, office space, networks, investors

Chapter II: Key Problem

Sanilab is currently at a point where they have developed their technology and products but so far have been unable to properly enter a market. Their SaniSystem is designed not for the individual consumer but for a bigger entity that provides their solution for a whole community, therefore making it a much bigger investment and decision to acquire their product.

2.1. Identified Problems

Ambivalent focus. Sanilab originally intended to provide its SaniSystem to poor communities so that they would have a good sanitation system and profit from the fertilizer by improving their ability to grow plants. However, the problem is that these poor communities are unable to afford SaniSystem as they already struggle paying small rental fees for the toilets (Russel et al., 2019). Therefore, Sanilab tried to appeal to the government to fund such projects for poor communities. Sadly, over the years working with the Peruvian government proved very unsuccessful, and not a single project was ever properly realized. As such, Sanilab considered other potential customers for its technology, such as mining companies. They would be able to afford the system and still benefit from the good sanitation systems, low water needs, short transportation ways for human waste and can use the fertilizer in the end to renaturize their mining sites.

However, Sanilab would still like to service poor communities as well, but they need someone to sponsor these projects, like big international NPOs for example. But this created the current two-sided focus now, looking for NPOs to sponsor projects on the one hand and payable costumers on the other hand (Muñoz, personal communication, July 11, 2023). And there seems to be no specific focus for either one. But to properly advance a startup a clear market focus is necessary to know who the early adopters of the product will be and where to introduce it (Picken, 2017).

Market entry. Another problem Sanilab faces is their lack of reputation in the market, making it very hard to make initial sales. Without having a proven record of accomplishment and a happy customer that verifies that their technology works, it is extremely hard to initially enter the market. Sanilab still struggles to set up the first few SaniSystem and become established and build some reputation for itself.

Financial resources. Part of the problem of market entry is the availability of financial resources. For example, to get customers to try their SaniSystem they can provide a trial period of 6 months where they can use the system for free to prove that it works. However, this 6-month trial period is cost-intensive, because all the production and setup costs need to be covered without any payments. There needs to be solid financial backing to be able to afford such trial periods in the first place. But without such trials, it is exceedingly difficult to impossible to make any sales.

2.2. Substance of the Problem

The key problem for Sanilab currently is the availability of financial resources, whether derived from public or private funds. These investments would empower the company to confidently offer trial periods to discerning companies, allowing them to experience the tangible advantages of the SaniSystem firsthand. Through these trial periods, companies can thoroughly test the system over extended durations, during which the manifold benefits of improved sanitation, reduced water consumption, and the valuable compost produced can be unequivocally demonstrated. As a result, companies are more likely to transition from trial participants to committed purchasers, solidifying their commitment to sustainable practices and cementing their partnership with Sanilab.

On the other hand, finding NPOs that provide sponsorship for poor communities to acquire SaniSystem has a similar effect as Sanilab is able to provide their product and enter into the market. NPO sponsorship becomes a beacon of hope for underserved areas, enabling

them to gain access to cutting-edge sanitation technology that can elevate their quality of life, enhance public health, and empower local economies. However, akin to the pursuit of investments from the corporate sector, accessing sponsorship from NPOs necessitates robust financial backing. From both perspectives getting these financial resources is the key limitation.

2.3. Location of the Problem

The location of the problem is in the commercial area because of the lack of funding that Sanilab has, making it difficult to have their prototypes and testing units that the customers can try, and later purchase. This financial limitation sends ripples across the business, impacting operations, logistics, marketing, etc.

The absence of adequate funding disrupts operations, hindering the smooth execution of projects and partnerships. In logistics, it curtails the efficient distribution of SaniSystems, limiting their reach and impact. Furthermore, the challenge extends to marketing, impeding effective communication and partnerships with potential clients. These repercussions cast a shadow over revenue generation, inhibiting the potential for sustained growth, in the long term. Addressing this financial hurdle with strategic solutions is pivotal for unlocking Sanilab's path to a more resilient and impactful future.

2.4. Ownership of the Problem

The responsibility of the problem lies first on the executive leader, in this case it includes the CEO and the senior management, who are accountable for strategic planning, financial decision-making, the allocation of resources, and finding partnerships, including governmental bodies, Non-Profit Organizations (NPOs), and other potential collaborators. The executive leaders' strategic acumen and adeptness in identifying investment avenues and securing vital sponsorships is important to overcome the financial resource issue.

In addition, the Marketing and Commercial area are responsible for creating awareness of the SaniSystem. In this role, they not only create widespread recognition of the innovation but also play an instrumental part in discerning and nurturing partnerships aligned with Sanilab's mission, attracting investors and donors to this business.

2.5. Magnitude of the Problem

The lack of financial support is substantial, as it directly influences Sanilab's ability to execute its core functions and expand its impact. The shortage of funds limits the organization's capacity to develop, produce, and distribute the SaniSystem effectively, leaving people without a sanitation system in their communities. The challenge hinders Sanilab from realizing its full potential, hindering innovation, growth, and the pursuit of its mission to provide sustainable sanitation solutions.

Within the effects are (a) the constrained availability of funds directly impacts product development, curtailing innovation and the creation of advanced sanitation technologies, (b) market penetration is impeded as limited resources hinder effective marketing and distribution efforts, restricting the reach of the SaniSystem to new communities and markets, (c) the challenge further extends to the organization's market reputation, potentially hindering its ability to showcase successful case studies and testimonials that would bolster credibility, (d) in a broader context, the long-term sustainability of Sanilab's mission and growth prospects are cast into uncertainty without the resolution of the funding problem.

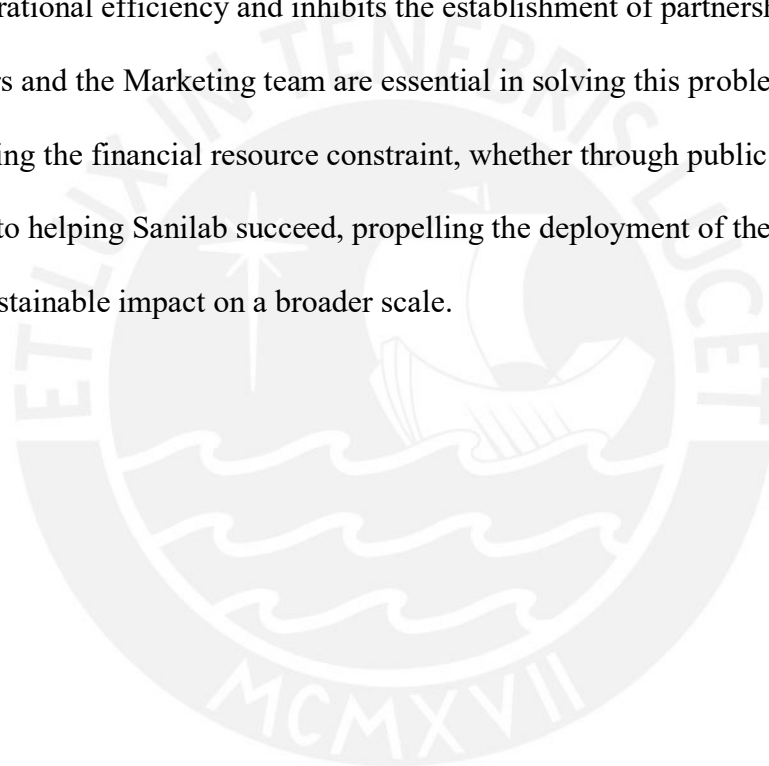
2.6. Time Perspective of the Problem

The problem has persisted since the founding of Sanilab, due to its ambivalent focus, making them focus more on the mining partnership rather than the social aspects at present. While equipped with Research and Development (R&D) capabilities and functional prototypes, the issue lies in the scarcity of funds required to amplify and scale the SaniSystems. This problem became even more pronounced during the COVID-19 pandemic,

where they struggled to secure the funds needed to make their original SaniSystem more widely available.

2.7. Conclusion

In summary, Sanilab is facing crucial challenges despite having inventive new technology. It is struggling to enter the market effectively and lack enough money to operate without any difficulties. The ambivalent focus between underserved communities and potential paying clients has led to a lack of specificity, while the scarcity of financial support undermines operational efficiency and inhibits the establishment of partnerships. The executive leaders and the Marketing team are essential in solving this problem, from different angles. Addressing the financial resource constraint, whether through public or private avenues, is key to helping Sanilab succeed, propelling the deployment of their SaniSystem, and fostering sustainable impact on a broader scale.



Chapter III: Literature Review

This section of the paper will address essential topics related to Sanilab. It involves conducting a research literature review from publications, journals, and other credible sources to discuss pertinent information from authors that will support the analysis. Additionally, a literature map is created to explicitly identify the relationships between each topic.

3.1. Literature Map

A literature mapping is drawn in this chapter to analyze essential topics to show the challenges of creating a non-profit organization. With that, three sections are identified: (a) resources, (b) types of non-profit organizations, and (c) social and environmental impacts. These related topics are crucial in developing a successful non-profit organization and creating a better understanding of the areas needed. Therefore, each section has multiple parts interlinked to identify the specific factors concerning these topics.

First, resources are related to three main ideas: start-up funding, government funding initiatives, and investors, which are critical for Sanilab and the overall start-up landscape in Peru and worldwide. It will be followed by types of non-profit organizations that mainly focus on non-governmental organizations and social enterprises. Lastly, it will provide non-profit organizations with social and environmental impacts, which is crucial in today's competition. This is focused on the impact of dry-toilet, recycling of human waste, and water scarcity in Peru and worldwide

A conclusion at the end will finalize the chapter and overall findings. It will provide learnings and assessments related to the topic given above.

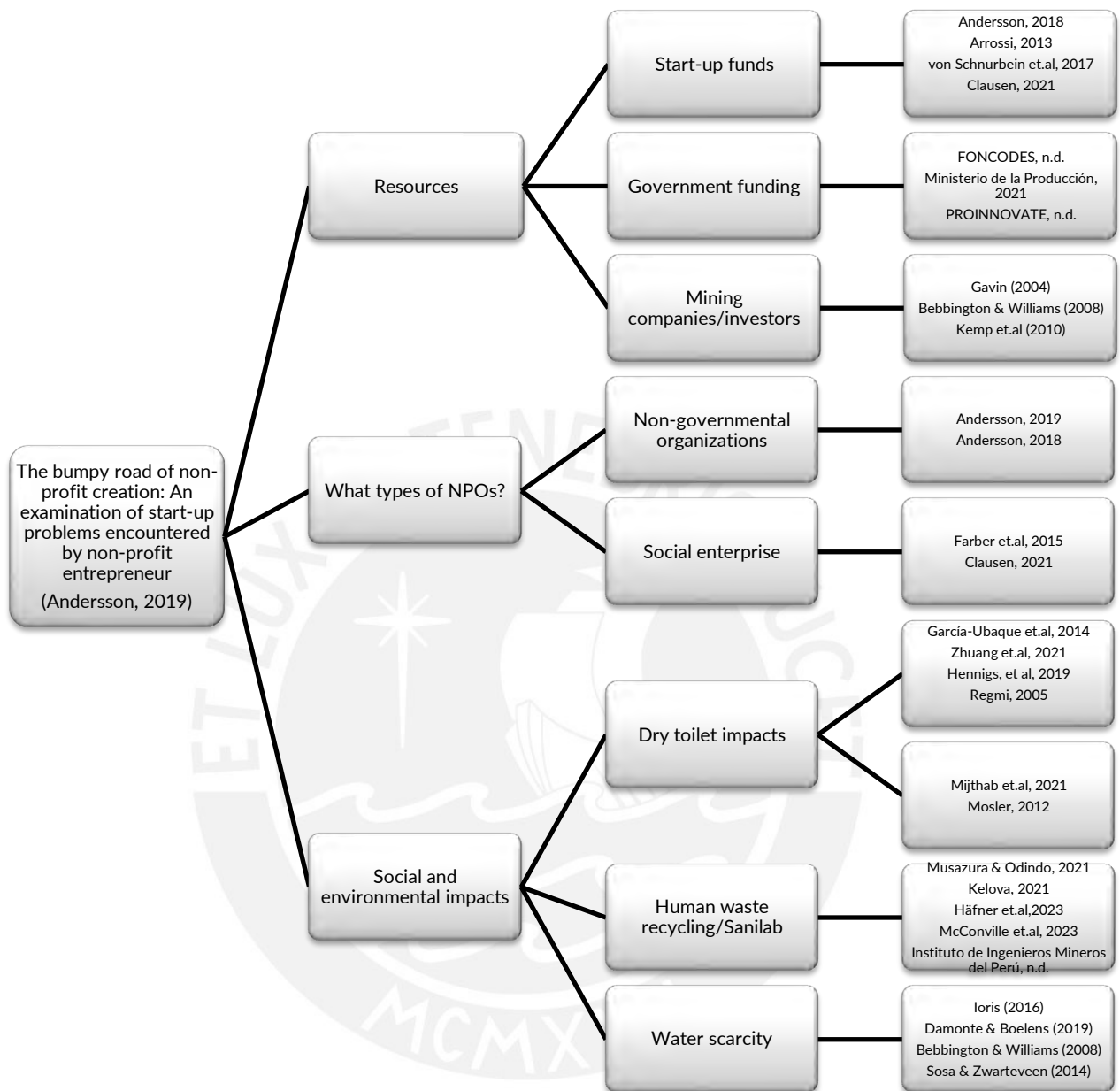


Figure 3. Literature map

Adopted from Andersson, F. O. (2019). The Bumpy Road of Nonprofit Creation: An Examination of Start-Up Problems Encountered by Nonprofit Entrepreneurs. *Nonprofit and Voluntary Sector Quarterly*, 48(1), 194–207. <https://doi.org/10.1177/0899764018785464>

3.2. Literature Review

3.2.1. Resources

Start-up funds. Not only aspiring non-profit entrepreneurs have multiple funding options from which to choose, but these early funding strategies are also likely to play a significant role in determining the success or failure of the start-up endeavor (Andersson, 2018) There are numerous programs and initiatives involving low-income groups and their community organizations to reduce poverty and meet fundamental needs (Arrossi, 2013). However, it is important to acknowledge that low-income groups face certain limitations in their ability to accomplish certain tasks, both on an individual level (such as constructing or improving their own shelters) and on a collective level (such as establishing infrastructure and services). These limitations arise due to a need for more technical support and resources (Arrossi, 2013).

Study shows that non-profit organizations rely on a variety of revenue streams. These sources fall into four major categories: (a) income from donations (from private individuals and businesses), (b) income from the government (through grants, contracts, and services), (c) income from own revenues (such as service fees and product sales), and (d) income from investments (von Schnurbein et.al, 2017). In this case, non-profit organizations have increasingly undertaken responsibilities that were formerly conducted by the public sector. Second, foundations and investors have shifted their strategies, relying more on targeted investments and innovative instruments (e.g., social impact bonds) as opposed to general donations (Clausen, 2021).

However, the increased bureaucratization of non-profit organizations is the result of increased regulation and formalized requirements for processes and operational methods creating a barrier of success (Clausen, 2021). There are arguments and concrete examples demonstrating that more specific and competitive funding transforms informal and frequently

smaller organizations into larger, more formalized, clinically and empirically oriented organizations and the increased bureaucracy is a natural consequence of modernization, and having a flexible organization and attracting volunteers are not mutually exclusive (Clausen, 2021).

Government funding. In Peru, various government funds and support mechanisms are in place to invest in and foster innovative start-ups, offering substantial financial assistance to businesses. Notably, the PROINNOVATE program, initiated by the Ministry of Production (PRODUCE), plays a pivotal role. Through this program, innovation projects are co-financed by the government, covering up to 90% of the total project cost through nationwide contests. The objective of these contests is to stimulate the creation of innovative solutions addressing social challenges that impact vulnerable populations, with an emphasis on research and development initiatives (PROINNOVATE, n.d.a).

An illustrative example is the Social Innovation Project Contest held in 2017, which tasked participants with devising mechanisms or devices to enhance access to safe and clean water in the Amazon region (PROINNOVATE, n.d.b). In addition to this, PROINNOVATE oversees the Startup Perú program, aimed at nurturing an entrepreneurial and innovative ecosystem within the country. This initiative creates an enabling environment for new businesses to thrive, fostering collaborations with various stakeholders, including universities, incubators, accelerators, and angel investors across different regions of Peru (Ministerio de la Producción, 2021).

The Ministry of Social Inclusion and Development (MIDIS) administers the Cooperation Fund for Social Development (FONCODES), a vital initiative targeting poverty and extreme poverty in both urban and rural settings (FONCODES, n.d.). FONCODES provides access to essential productive infrastructure aimed at enhancing the productivity and socioeconomic prospects of underprivileged communities. The core objective is to empower

individuals and facilitate their integration into the marketplace (FONCODES, n.d.). Notably, Sanilab's technological approach aligns seamlessly with this mission. Through its utilization of human fertilizer, Sanilab's Sanisystem holds the potential to significantly contribute to this cause, particularly benefiting families engaged in agriculture. By facilitating improved soil health and crop yield, Sanilab's solution has the capacity to bolster the prospects of these families, effectively supporting their entry into the market and aligning harmoniously with FONCODES' overarching vision of social and economic empowerment.

The Peruvian government-driven initiatives not only provide vital financial support but also contribute to the growth and development of innovative start-ups, laying the foundation for a dynamic and vibrant entrepreneurial landscape in the country.

Investors – mining companies in Peru. Mining companies are considered very suitable investors and early adaptors of Sanilab's technology because of their unique characteristics and challenges. Peru is a big mining country and therefore has a strong mining sector with good financial backing (Sosa & Zwartveen, 2014). Mining is a very water consuming process and usually happens in remote areas where access to water is limited (Bebbington et al., 2008). Often it even results in conflicts with local communities over their water resources. Therefore, having dry toilets that reduce their water usage is highly positive for them.

Extracting metals or other minerals from the ground is also very harmful for the environment (Bridge, 2004). That is why mining companies have strong regulations to restore their mining sites after completion. For that purpose, human waste fertilizer, a byproduct of dry toilets, is useful for them too. They can use it to mitigate some of their negative environmental impact.

3.2.2. Types of non-profit organizations

Non-governmental organizations. Starting a non-profit organization involves a complex series of steps, and throughout this process, individuals initiating these organizations

are likely to face a range of challenges (Andersson, 2019). These problems are broad and the journey to success of a start-up venture can be bumpy to many. According to a study by Andersson (2019), these challenges impacted the degree of success achieved by start-up ventures. Specifically, two types of problems, namely financial and information-related issues, were found to have adverse effects on start-up success, pointing out the category of barriers, such as a slow process in establishing organizational structures and functions focused on facilitating and addressing communication and coordination obstacles.

Additionally, the difficulty in developing and implementing the main service and product, key administrative systems, and finding and securing the right location impacts the organizational structure of a start-up venture. Lastly, it is crucial for a non-profit investment to have and gain the desired amount of start-up funding, and not getting access to the right investors and partners creates a barrier as well financially to the organization (Andersson, 2019).

Although personal commitment, sweat equity, and determining a vision/mission are essential components of the pre-organization phase, one of the most important tasks for nascent nonprofit entrepreneurs is to identify and decide from whom to obtain the financial resources required to support the organization during its first year(s) of operations (Andersson, 2018).

Social enterprises. Lima's social enterprise is growing. This area of activity, events that promote it, and various activities to promote it are attracting more individuals. Young individuals, in particular, show an increased consciousness regarding social and environmental concerns, perceiving enterprises as entities possessing the authority and capacity to effectively tackle these issues (Farber et.al, 2015). Moreover, at the national level, numerous stakeholders within the social entrepreneurship ecosystem have expressed that Peru

possesses substantial potential for the development of growing social enterprises (Farber et.al, 2015).

Social non-profit organizations play a crucial role for numerous individuals: they create communities for lonely youth, provide services and coercion-free spaces for those on the margins of society, and serve as the voice for vulnerable individuals who struggle to have their voices heard (Clausen, 2021). The gap in access to adequate sanitation disproportionately impacts rural populations residing in low- and middle-income nations, where advancements are observed to occur at a slower pace, therefore, creating a market for non-profit initiatives (Mijthab et.al, 2021).

Providing populations in developing nations with hygiene, sanitation, and water "infrastructure" must be accompanied by behavior modification programs (Mosler, 2012). However, public health professionals increasingly believe providing people with water and sanitation equipment is insufficient. Numerous strategies are employed to address the "software," which refers to the essential change in behavior that must accompany the sanitation hardware (Mosler, 2012).

3.2.3. Social and environmental impacts

Dry toilet impact assessment. Dry toilets have emerged as an alternative sanitation solution, offering potential benefits for rural and peri-urban areas in different regions. This literature review examines studies that investigate the feasibility, impact, and promotion of dry toilets as sustainable sanitation options in various contexts.

Vaca-Bohórquez, and García-Ubaque (2014) conducted a study in a rural area of Colombia to evaluate the use of dry toilets. Fifteen families participated, with a dry composting toilet installed in one house for demonstration over five months. The researchers performed an ex-post evaluation to assess technical and economic aspects. The results revealed that dry toilets are easy to construct and install, providing environmental benefits by

reducing water source contamination and minimizing chemical fertilizer usage. Additionally, significant cost savings were identified compared to conventional toilets. However, the study also highlighted cultural barriers that hindered the widespread adoption of dry toilets, emphasizing the need to address social and cultural factors to achieve broader acceptance and impact.

Zhuang, Fang, and Ji (2021) focused on promoting urine-diverting dry toilets (UDDTs) as a sustainable sanitation solution in rural areas. Their study implemented a UDDT promotional program in a Chinese village, supported by the local government. Impressively, the program achieved a UDDT coverage rate of 95.7% within one year. The researchers analyzed survey data from local villagers to identify factors associated with successful UDDT adoption and operation. Six implementation factors, including trigger meetings, follow-up visits, commendation conferences, brand ambassadors, operation demonstration, and on-site training, were significantly and independently correlated with the effectiveness of UDDT prevalence. These findings offer valuable insights for improving UDDT promotion strategies to support sustainable sanitation practices in rural regions.

Hennigs, Ravndal, Blose, et al. (2019) conducted field testing of a non-fluid-based mechanical toilet flush prototype in South Africa. The study assessed the functionality of the mechanical flush and users' perceptions. Users' acceptance varied depending on their familiarity with water flush toilets. Those accustomed to water flush toilets were hesitant about using a waterless flush at home, whereas users familiar with Urine Diversion Dehydration Toilets were more receptive to the concept. The study also explored the efficiency of swipe materials in cleaning the flush's rotating bowl through a controlled laboratory experiment. The results identified a silicone rubber with an oil-bleed-effect as the most effective material. Implementing a mechanical waterless flush in existing dry toilet

systems holds promise for improving acceptance and the success of waterless sanitation practices.

Regmi (2005) investigated the feasibility of dry toilets as a sustainable solution for rural development in Nepal. The study highlighted the pressing issue of water pollution caused by inadequate sewage systems and waste disposal into water courses. Given the high costs associated with conventional treatment technologies, dry toilets emerge as a viable option in regions with limited financial resources. The study tested two types of dry toilet reactors and reported promising results in reducing fecal coliform and organic matter. Implementing dry toilets in Nepal could conserve significant water resources and reduce waste treatment demands, presenting a viable and sustainable sanitation approach for rural development.

In conclusion, these studies collectively demonstrate the potential of dry toilets as sustainable sanitation solutions in different geographic contexts. From Colombia to China and South Africa, dry toilets offer promising advantages in reducing water pollution, conserving resources, and lowering operational costs. Despite cultural barriers and user acceptance challenges, the evidence suggests that proper promotion and community involvement can drive the successful adoption of dry toilets, supporting a sustainable approach to sanitation and rural development.

Human waste recycling/fertilizer – Sanilab. Numerous studies have recently highlighted the increasing importance of human waste fertilizer. With the world's population on the rise, the demand for food, particularly fruits and vegetables, has surged, compelling countries, especially those in developing and low-income regions, to explore eco-friendly fertilizer alternatives, including human waste (Musazura & Odindo, 2021). As underscored by Kelova (2021), recycling human waste not only addresses fertilizer scarcity but also

enhances nutrient management and contributes to the principles of a circular economy (Häfner et al, 2023).

In 2023, Häfner, Monzon et al. unveiled affirmative findings on the positive effects of human waste fertilizer, demonstrating its value for nitrified urine and fecal compost applications, both in soil enhancement and product yield (2023: 3). Another distinct study explored different human-derived fertilizers, extracting essential nutrients from wastewater, further corroborating the potential of these approaches (McConville et al, 2023).

In Peru, Sanilab has introduced a pioneering solution in the form of human waste fertilizers, embarking on a journey that commenced with the development of dry toilets and ended with the creation of the SaniSystem. This system offers both dry and liquid fertilizers, exemplified by their product Forty Plant. The Forty Plant serves as a remarkable response to the dual challenges of water scarcity and fertilizer availability, issues that have reverberated across the agricultural sectors amidst the global crisis. Significantly, this new approach not only addresses critical environmental concerns but also serves as an economic driver, generating employment opportunities within communities (Instituto de Ingenieros Mineros del Perú, n.d.).

The adoption of the Forty Plant fosters sustainability within communities, yielding dual benefits of conserving substantial volumes of water and harnessing substantial quantities of natural fertilizer. By synergistically addressing water scarcity and fertilizer deficits, this solution plays an important role in contributing to the preservation of natural resources. Sanilab's approach is a testament to the potential of holistic solutions to usher in transformative change, elevating not only agricultural practices but also the overall well-being of the communities it serves.

Water scarcity in Peru. Water scarcity in Peru has been worsening over the years, making it an increasingly critical issue. It affects various parts of the country and different

sectors. The capital Lima, with its immense population, struggles with water, and the underdevelopment of water services is typical in the poorest parts of the city (Ioris, 2012; Ioris 2016). But it is not just affecting the city. Mining companies often operate in remote areas and have very high water needs themselves. In addition, they often pollute the water they use, further limiting its future use and creating big environmental concerns (Sosa & Zwarteveen, 2014). Local communities are often concerned about how mining activities adversely affect their water supplies (Bebbington & Williams, 2008).

In addition, Peru is also a country with a lot of agriculture, which poses very high water needs itself. Through the rapid growth of agricultural exports in the last few years, water needs have shifted greatly and caused a lot of territorial and social changes and inequalities, especially in the coastal areas (Damonte & Boelens, 2019)

3.3. Conclusion

In conclusion, three crucial areas related to establishing a non-profit organization to be considered are mentioned. These are resources needed to sustain the business, identify the company's goals and what type of organizations they are in, and the impacts they can provide to society and the environment. Sanilab needs to consider these factors to continue the business further. Additionally, using these factors, key problems of the company were identified in the previous chapter, and a comprehensive analysis to dig deeper into the root cause of the problem are shown in the following section.

First, the availability and distribution of start-up funding considerably impacts the success of non-profit start-ups. Donations, government grants, internal income, and investments are just a few financing sources nonprofit organizations use. A crucial key factor mentioned in the review is that government support and programs for social enterprise are present in Peru, like PROINNOVATE and FONCODES program, who are essential in nurturing creative start-ups and tackling social issues. These initiatives offer crucial financial

assistance, possibilities for collaboration, and a supportive atmosphere for start-up companies to prosper. For Sanilab, bureaucracy, and regulatory constraints can pose obstacles to success, demanding ways to overcome them. Moreover, even though Sanilab has desired impact social and environmental impact, access to adequate finance, investor relationships, and effective organizational structures are essential.

Furthermore, solutions that conserve water and lessen negative impacts are highly suited for the mining industry due to its considerable water use and environmental impact. Mining businesses may help restore the environment and conserve resources by recycling human waste as fertilizer.

Sanilab's SaniSystem, which uses dry toilets and human waste recycling, offers hope for long-term sanitation solutions. These solutions address the lack of fresh water, lessen contamination, and promote a circular economy by turning trash into useful resources. Studies highlight the potential advantages of using human feces as a fertilizer to boost agricultural output, soil health, and nutrient management while promoting environmental sustainability. Water scarcity is a major problem in Peru that impacts many industries, including metropolitan regions, mining, agriculture, and local populations. Water-related challenges are made more difficult by the underdevelopment of water services and worries about pollution, necessitating coordinated and sustainable measures to address these problems.

As a result, the literature studies emphasize how funding, creative solutions, environmental concerns, and social effect are interconnected in the context of start-ups, non-profit organizations, government efforts, investors, sanitation solutions, and water scarcity in Peru. These observations highlight the value of teamwork, intelligent financial allocation, and all-encompassing strategies for tackling difficult problems and advancing sustainable development.

Chapter IV: Qualitative/Quantitative Analysis

This chapter provides an extensive analysis of Sanilab's operational structure to understand better the key factors contributing to the company's present challenges defined in the previous chapter. It will identify specific details of these challenges and their interrelated nature. Also, it will provide opportunities for the consulting team to determine the appropriate solutions to the challenges.

To accomplish this objective, a qualitative analysis based on interviews with the CEO of Sanilab is employed to review crucial areas with greater detail. Furthermore, an interview with a mining expert was conducted to investigate the feasibility of one of the company's target markets. Additionally, the perspective of another startup that collaborates with the mining sector was taken into consideration. The data gathered from the interview with a community representative of Pachacamac and a previous survey conducted with Nueva Shita was also used for this analysis. Finally, a quantitative evaluation is conducted at the end, specifically emphasizing the company's current financial performance, and its strategic activities to achieve future objectives.

4.1. Qualitative Analysis

4.1.1. Analysis of the communities served by Sanilab

In the course of an initial consultation with CEO Raúl Muñoz, the topic of the communities that Sanilab serves was discussed. The innovative execution of the dry toilet initiative in Pachacamac, located in Lima's southern district, stands out as one of the primary communities that received support. The company places special emphasis on this particular low-income community because it is the site of its first initiative and initially serves 60 households.

Several findings were gathered through the interview with Pachacamac representative Norma Alberca. The SaniSystem dry toilet project was closed, and community members are

not using it anymore. It was shut down due to the pandemic, but according to her, they want to reopen it again. Another note is that they are currently using a regular toilet. Other community members are also back to open defecation and using the dry toilet in a non-intended way. Moreover, though having the unit is helpful for them, not all community members know how to properly use it. Also, they do not know how to maintain and manage the system. Overall, negative insights from the community members were gathered.

The consulting team's further investigation of Sanilab's current market environment revealed another community project – Nueva Shita, a town that the CEO had not previously mentioned. Despite this absence, significant insights emerged that are important for the system's overall effectiveness. The details of an interview performed in this neighborhood will be covered in the following section.

4.1.2. Analysis of the survey conducted in Nueva Shita community

To evaluate the performance of the Sanilab dry toilet and the community's opinion of the product, Gian Carlos, a Sanilab representative, performed an interview in Nueva Shita, Salas Lambayeque. The interview, which took place on February 9, 2021, in the midst of the pandemic, revealed a problem the organization was facing. The full audio transcription of the interview is available in Appendix C.

Men and women made up the sample of 30 respondents who took part in the interview and talked about the performance and use of the dry toilet. The investigation also showed that a significant portion of the population was unaware of good sanitary practices.

There was a total of 70 SaniSystem dry toilets in the area, with 13 units being distributed to schools and 57 units allocated to community members. The main findings of the interview highlighted a lack of knowledge among community members on how to properly use the Sanilab dry toilet because of insufficient education. Numerous people were seen using the unit outside of its intended function, a sign of misuse of the system.

Unexpectedly, people were still digging holes to dump their dry toilet waste rather than using the official waste collecting system that transported the dry waste to the transformation plant. Inadequate maintenance procedures also gave rise to a significant problem.

Unfortunately, the community frequently ignored the dry toilet's genuine intended use. Due to the transformation plant's lack of operation due to the pandemic, human waste was frequently dumped in holes meters away from homes. Despite the availability of dry toilet facilities, open defecation continued in the neighborhood, which contributed to the rise of more significant health issues such as diarrheal infections and was mostly attributed to poor maintenance according to the surveyed respondents (Sanilab, n.d.d). Therefore, Gian Carlos' interview highlighted the obstacles with education, upkeep, and correct waste disposal methods that the community faced when employing the Sanilab dry toilet, leading to serious public health concerns.

4.1.3. Number of employees of Sanilab

Raúl Munoz is the sole person responsible for the general management of the organization, as stated in the human resources part of Chapter 1.4.5. However, it presents difficulties for the company in executing its projects. With the assistance of a family member, he completes all required paperwork, contacts potential partners and investors, and handles internal administrative tasks.

The Sanilab organizational structure can be found in Appendix A and it was acquired by the consulting team from the company's internal database. It revealed that the company has a traditional hierarchical structure, however, it is unclear who fills specific positions within the company as only the name of the CEO Raúl Muñoz is visible. According to one of Sanilab's volunteers, positions within a social enterprise can change frequently, so some of the positions are blank. The organization clearly lacks the personnel to fill all the positions.

4.1.4. Interview with a mining expert

In the interview with the mining expert Alvaro Rodriguez on the 16th of August 2023, the topic of sanitation in mining companies was discussed, particularly focusing on how sanitation works and the related challenges:

(A. Rodriguez, personal communication, August 16, 2023).

Formal mining companies provide good accommodations for workers that are comparable to hotel facilities. In contrast, informal or illegal mining operations have much worse living conditions. The information from this interview only concerns formal mining. Access to water 24/7 is generally available for mining camps, even though water availability can be an issue for mining operations as a whole. While water shortages can affect mining operations, water supply for the encampments is not a significant problem. The water used for encampments is a small portion of the overall water usage, and mining companies typically need to establish water sources from rivers or the sea before starting their operations. Sanitation conditions in mining camps are very good based on the interviewee's experiences, comparing it to staying in a hotel. There are no issues with sanitation to his knowledge, and workers are happy with the sanitation systems.

Dry toilets are not commonly used in mining encampments. There is no strong incentive for mining companies to switch from their existing sanitation systems, which are considered easy to maintain. Additionally, established camps are unlikely to change their systems, and workers might resist transitioning to a new system due to familiarity with traditional toilets (A. Rodriguez, personal communication, August 16, 2023). In terms of costs there is little motivation for mining companies to adopt dry toilet systems. The cost of sanitation in mining encampments is a relatively small fraction of the overall mining expenses, making changes in this area less attractive.

Most mining encampments in Peru house around 1000-2000 workers. The interviewee noted that there have been few new mine openings in recent years, only one in the last three years. Exploration encampments are also being built, but these are generally less sophisticated and are part of a longer exploration process lasting 5-10 years, so the number of new exploration camps is very small.

Wastewater is managed through individual water treatment facilities within mining operations. A closed-loop system is used, where water is treated and then reused. Inside the main encampments, sewage networks are present, with human waste being directed to waste dumps; some mines also use this waste as fertilizer.

4.1.5. Interview with a modular-housing start-up

As part of the qualitative assessment of Sanilab's current situation an interview with a related start-up that provides modular housing was conducted on the 20th of August 2023. This start-up, Ecobuildtec also attempts to enter the mining sector in Peru and incorporates toilets in their modular housing and are thus related to the business of Sanilab.

(E. Pizarro, personal communication, August 20, 2023).

The interview discussed various aspects of the company's modular installation of bathrooms and their applications in mining camps and residences. The bathrooms use porcelain fixtures and flushing mechanisms, with an emphasis on water-saving toilets for efficient water usage. The company also expressed openness to considering new sanitation proposals.

In mining camps, the company provides running water through various systems, including treated water, drinking water, and hot water. The possibility of alternative sanitation options, such as dry toilets, was explored, particularly for remote locations lacking sewage infrastructure. The company is collaborating with other related companies like Sanima in implementing dry toilet systems.

Regarding cost and capacity, the standard residence for mining companies is the Ecko I model, approximately costing \$300 per square meter. This model comfortably houses 32 people and features bathroom modules with multiple toilets, showers, urinals, and sinks. Working with mining companies presents challenges due to industry-specific requirements. The company's appeal lies in its technological innovation, affordability, and efficient assembly speed. It actively conducts research to identify potential clients (mining projects planned in the next 3 years), targeting mining projects committed to innovation and technology. They also engage through contests and industry events to enhance their visibility and sales efforts (E. Pizarro, personal communication, August 20, 2023).

4.2. Quantitative Analysis

The quantitative analysis will present available data gathered by the consulting team to give a more in-depth interpretation of the initial findings and an analysis was conducted of the financial performance of Sanilab. Also, the company's pricing model was analyzed by comparing it to another major player in Peru.

4.2.1. Analysis of Sanilab's financial performance

Currently, Sanilab is in the phase of reactivation from its sudden stop of operation during the pandemic, and therefore its financial situation varied each year. Its previous income was coming from the sale of their biofertilizer Fortyplant and it varies each year. It is also notable that the company has few large investments for the R&D of its system. Overall, the main source of the income was solely based on sale of the sanitation system together with the Germany's Agra project in Pachacamac. With little to no income, expenses had to be cut to the bare minimum. Therefore, there are no consistent expenses or staff; experts for different areas are employed temporarily when the need arises.

4.2.2. Pricing

Comparing the pricing strategies of Sanima and Sanilab, two companies offering dry toilet solutions for low-income communities in Peru, reveals distinct approaches to addressing sanitation needs. While the services they provide are not identical, they share a common goal of improving sanitation in underserved areas. Sanima, with its presence in Lima, caters to a substantial portion of the population through a rental system. This approach allows communities to access dry toilet solutions without the upfront costs of ownership. In contrast, Sanilab adopts a sales model, providing the entire system to communities. While the comparison may not be direct due to the differing business models and geographic reach, it highlights the diverse strategies employed by companies to make sanitation solutions accessible to low-income populations in Peru. Evaluating the effectiveness and affordability of these approaches can offer valuable insights into addressing sanitation challenges in resource-constrained settings.

Sanima: Sanima adopts a straightforward pricing model, requiring a fixed monthly payment of 39 Soles per household for their sanitation solution (Ferguson et. al., 2022). This pricing structure provides clarity and predictability for users regarding their monthly sanitation expenses.

Sanilab: Conversely, Sanilab employs an alternative pricing strategy. The organization offers the SaniSystem, a sanitation solution serving a total of 60 families, with an initial cost of 137,000 Soles (Muñoz, personal communication, July 11, 2023). But, beyond the upfront fee, Sanilab communities incur running costs. These costs include a monthly expenditure of 10 Soles per family for the procurement of sawdust, an essential component of the dry toilet system.

Furthermore, the organization must operate the fertilizer plant to recycle feces, a process necessitating the employment of two individuals for five hours per day. Given that

the minimum wage in Peru stands at 1,025 Soles per month for full-time employment (Andina, 2022), adapting this rate to 25 hours per week results in additional monthly costs of 12,812.50 Soles. Divided by 60 families that means monthly labor costs of 213.54 Soles per month per family. Therefore, the monthly cost per family for the SaniSystem is 223.54 Soles, more than five times more than the 39 Soles of Sanima. Yet the SaniSystem requires an initial investment of 137,000 Soles, hence being far more expensive in terms of both initial costs as well as running cost.

As initially mentioned, it is a difficult comparison as their offerings are not identical, but a pricing discrepancy this big is certainly a point of concern. This comparison suggests that Sanilab needs to reconsider their pricing strategy or find very strong arguments that justify their far superior price.

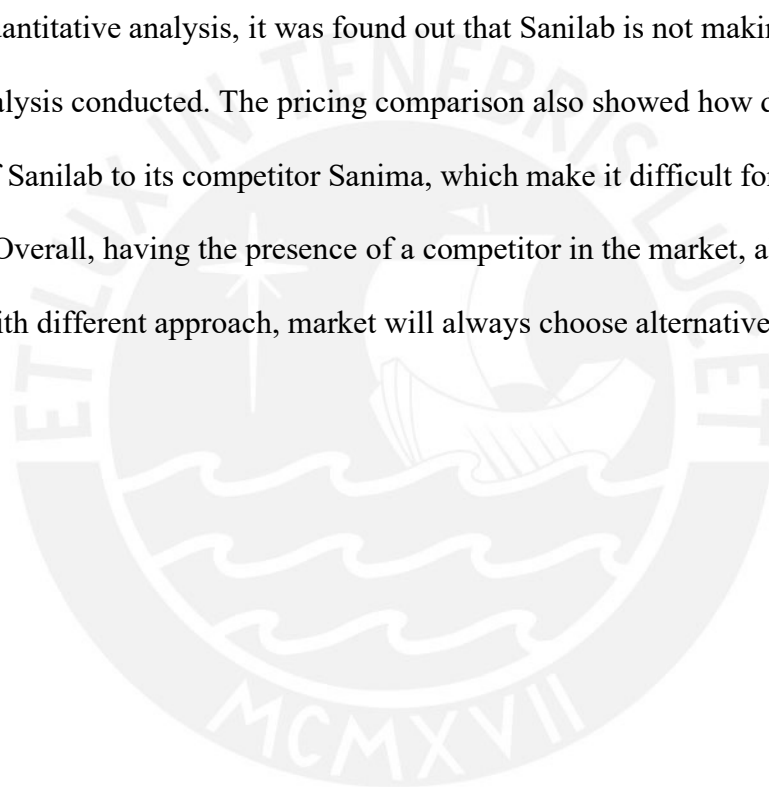
4.3. Conclusions

Overall, qualitative research revealed internal company problems based on the multiple meetings and interviews. According to statements made to the consulting team by Sanilab CEO Raúl Muñoz, they faced numerous difficulties as a result of the identified signs in the analysis. Three areas of concern are presented in the qualitative analysis; interviews with project communities, mining experts, and a competitor which highlighted significant findings regarding the implementation of Sanilab's products.

Pachacamac was initially the sole member on the lists, but it was later discovered that there was an additional site. It is interesting that the survey with Nueva Shita community generated unfavorable responses, and that significant issues with the SaniSystem's users have been found. Similar findings were gathered from the interview conducted with the Pachacamac representative as the SaniSystem dry toilet is not effective to the community served. Also, lack of training and awareness of the proper use of the system make it more complicated for them. Additionally, it fosters an awareness that the current system is

ineffective and not providing the communities with the proper support for the system. In addition, the fact that there is only one person working with Sanilab which is the CEO Raúl Muñoz's points to a serious problem. Lastly, putting more emphasis on the interview with mining experts helped to clarify that while targeting mining companies is a possibility, doing so will be more difficult for Sanilab because these businesses are already up and running, have complete, sophisticated systems already in place for thousands of workers and have no immediate need for Sanilab systems.

In the quantitative analysis, it was found out that Sanilab is not making much income based on the analysis conducted. The pricing comparison also showed how different the discrepancies of Sanilab to its competitor Sanima, which make it difficult for communities to get the system. Overall, having the presence of a competitor in the market, although offering same product with different approach, market will always choose alternatives to get cheaper price.



Chapter V: Root Cause Analysis of the Problem

5.1. Working Methodology to Identify the Root Cause

Root cause analysis is a technique that aids in comprehending the fundamental reason behind a problem or the initial causes that led to its occurrence. It enables an exploration into the underlying triggers of the problem, facilitating the identification of suitable solutions (Shojania & Wald, 2001). In this chapter a root-cause analysis has been performed to analyze the causes of the identified main problem, namely the lack of Sanilab's financial resources.

5.2. Analysis of the Causes and root causes leading to the problem

5.2.1. Cause 1 – Market entry

Sanilab's journey into the market with their SaniSystem has been accompanied by a series of challenges. One significant cause contributing to the lack of financial resources stems from the company's unsuccessful attempts at market entry. Originally envisioned as a solution to aid underserved communities, the reality became evident: communities lacked the necessary financial means, knowledge, and sometimes even the inclination to adopt the product. This realization prompted a shift in strategy.

Recognizing the imperative for a market, Sanilab has reoriented its focus toward potential sectors, with a specific emphasis on targeting mining companies and their subcontractors. Additionally, they have sought to engage Non-Governmental Organizations (NPOs) as pivotal collaborators who could potentially provide funding and support for the implementation of SaniSystem projects, emulating their initial pilot project in the Pachacamac community. However, this transition has revealed a fundamental challenge, resulting in a somewhat ambivalent stance regarding the most optimal markets to enter and generate the essential financial resources for the company. To navigate this intricate landscape effectively, the need for a comprehensive and well researched market analysis becomes indispensable. Furthermore, this assessment should not overlook potential markets

that may harbor untapped potential, including domains like eco-tourism festivals and agriculture.

5.2.2. Cause 2 – Management

The second cause contributing to the company's lack of financial resources is its management structure. One root cause can be traced back to the absence of a well-defined organizational framework within the company. Presently, Raúl finds himself working alone. While he received volunteer assistance for his initial project, a consistent and reliable support system remains absent. Another pivotal factor identified is the deficiency in business acumen. While SaniSystem itself stands as a new product, it necessitates effective marketing and sales efforts. However, since the inception of the company and its first project, a considerable amount of time has elapsed. While the system's functionality has been established, the vital aspects of managing the business and its operations have not been adequately addressed by the CEO.

It is imperative for Sanilab to recognize that a company cannot thrive solely on the merits of its product and its developmental aspects. Without a robust management strategy encompassing the entire spectrum of business operations, financial resources are bound to remain elusive. In essence, a holistic approach to both product innovation and business management is essential for the company's sustained existence.

5.2.3. Cause 3 – Environment

The third major factor contributing to the scarcity of financial resources is the operational environment within which the company functions. An underlying determinant of this financial challenge is the competitive landscape. In the realm of dry toilet sales, Sanilab faces competition, as elaborated upon in section 1.2.5. Peru's market hosts several other companies vying for the same clientele, a circumstance that impedes Sanilab's distinctiveness in the realm of dry toilet offerings.

In addition, Sanilab's inception in 2017 has not been accompanied by the establishment of substantial business networks, a factor that has directly impacted its lack of sales. Although tentative efforts have been made to penetrate sectors like mining, no successful transactions have been realized. The absence of a robust and suitable network effectively hinders Sanilab's ability to penetrate markets and consequently inhibits its capacity to generate sales. As a result, the absence of a conducive business ecosystem further exacerbates the challenge of financial resource scarcity for Sanilab.

5.2.4. Cause 4 – Lack of direction

Another factor identified is the absence of clear strategic orientation within the company. Following their initial project within the Pachacamac community, Sanilab attempted to diversify its focus, aiming not only at communities but also at mining companies. However, the reliance on foreign NPOs for the initiation of their sole project, which was developed in partnership with a German NPO, has led to a significant dependence on external funding sources. This has highlighted a fundamental issue concerning the viability of their business model. Relying solely on NPO funding to sustain the SaniSystem will likely prove unsustainable in the long run.

Presently, Sanilab's aspirations hinge on securing the financial support of a European NPO for the upcoming decade. However, placing exclusive emphasis on this avenue will fall short of transforming them into a functional social enterprise. Another underlying cause contributing to the dearth of financial resources stems from the absence of well-defined growth targets. Since its establishment, the company has failed to articulate clear and attainable growth objectives. This lack of strategic direction in terms of expansion renders the company ill-equipped to generate sales and, consequently, to amass the financial resources it requires. Therefore, addressing both the overreliance on NPO funding and setting concrete

growth targets emerges as pivotal steps for Sanilab to overcome its financial resource constraints.

5.2.5. Cause 5 – Lack of education and awareness

Sanilab is currently experiencing a lack of comprehensive business guidance. As they openly communicated to us, being newcomers to the startup landscape, they have grappled with uncertainty about the optimal direction for their business endeavors since 2017. An underlying factor contributing to this predicament is the engineering background of the founder, which has led to an emphasis on the product itself, potentially overshadowing the crucial business aspect of their social startup.

The absence of a well-defined and regularly updated company structure, a comprehensive business plan, and transparent financial statements further compounds the challenge. This deficiency makes it difficult for potential investors to gain a comprehensive understanding of the company's operations and potential. Without a clear view of these crucial aspects, it becomes challenging for investors to instill the necessary confidence in the business, inhibiting their willingness to invest in it.

5.2.6. Cause 6 – Lack of right marketing strategy

Sanilab has made efforts to promote their products through a functional website that offers a description of their offerings. However, a notable drawback lies in the absence of pricing information, a critical component for potential customers seeking to assess the value proposition. Compounding this issue is the presence of extraneous and complex information on the website that does not directly relate to their product, thereby diverting attention away from the product being marketed. Moreover, a clear demarcation between their main product, SaniSystem, and their fertilizer offerings is currently lacking. This delineation is crucial, particularly for potential investors interested in understanding the cost structure and the distinct components of SaniSystem and its relationship to their own product, Fortyplant. As

Sanilab is primarily seeking investors for SaniSystem, it becomes imperative to establish a clear separation between these two business lines.

Maintaining regular updates on their website is essential to provide pertinent and up-to-date information. Additionally, expanding their marketing strategies for SaniSystem could prove beneficial. Presently, their presence for SaniSystem is notably absent from popular platforms like Instagram and TikTok, which could serve as valuable channels for reaching a wider audience and garnering interest in their product.

5.3. Fishbone analysis

The Fishbone Analysis, also known as the Ishikawa Diagram due to its originator, Mr. Kaoru Ishikawa, is a valuable tool for assessing business processes and their efficiency. Resembling the skeletal structure of a fish, the fishbone diagram visually represents causes and sub-causes of a specific issue, making it an essential part of "Cause-Effect analysis" (Bose, 2012).

In this technique, the core problem is positioned at the diagram's head, while causes form the main "bones," with smaller branches representing sub-causes. By employing four categories—market entry, management, direction, environment—the fishbone diagram systematically exposes the roots of a problem, allowing comprehensive evaluation and revealing key underlying causes (Ishikawa, 1986).

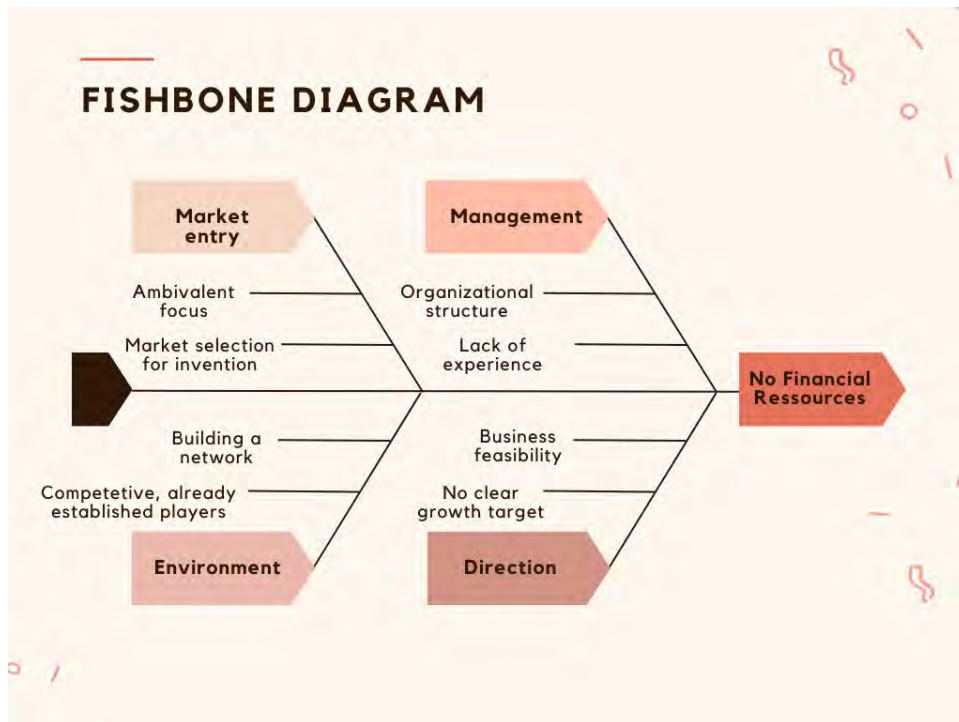


Figure 4. Fishbone Diagram.

5.4. Short List of root/key causes of the problem

Upon collaboration with the client, a condensed list of root/key causes for the problem was formulated and is illustrated in Figure 5. Regarding the absence of appropriate marketing efforts, it is worth noting that the co-owner possesses an educational background in marketing and is prepared to provide support for the startup. This prompted a shift in focus, as this particular cause can be addressed with available resources, and the intention is for the owners to manage this aspect themselves.

Conversely, in addressing the lack of education and awareness, a consistent requirement for external assistance is evident. Given the owner's predominant focus on the technical engineering aspect of SaniSystem, there is a recognized need for an external individual with a business-oriented background. While not entirely aligned with the manager's preferences, this move aims to steer the company toward a more business-focused trajectory. Moreover, the pricing issue has been earmarked. It is notable that the CEO exhibited hesitancy to modify or engage in discussions about the pricing structure.

Consequently, our abbreviated list of root/key causes, as agreed upon with the client, has been streamlined into four distinct categories: market entry, management, direction, and environment.

5.5. Conclusions

Sanilab's lack of financial resources can be attributed to several key causes. Initially, difficulties in market entry were due to the limited resources within the targeted communities. This prompted a shift towards the mining sector and collaboration with NPOs for funding. Secondly, a deficient management structure and limited business expertise hindered effective sales initiatives. The operational landscape, encompassing competition and weak business networks, further compounded these challenges. Another contributing cause was the absence of a clear strategic direction, heavy reliance on foreign NPOs, and the lack of defined growth targets, raising concerns about long-term sustainability.

Furthermore, marketing suffered from a lack of attention to details and up-to-date information. Collectively, causes like market entry issues, management gaps, operational environment challenges, strategic direction, education gaps, marketing strategy deficiencies, and pricing converge to explain Sanilab's lack of financial resources. Addressing these core causes is imperative for their growth and success within the dry toilet market.

A fishbone diagram, organized into four categories—market entry, management, direction, environment—was created in accordance with the client's input, containing key causes and root causes. The diagram systematically dissects the problem, facilitating a comprehensive assessment (Ishikawa, 1986).

Chapter VI: Alternative Solution

In the upcoming chapter, a deeper examination is conducted into the challenges previously discussed, with the intention of presenting different solutions that offer a novel outlook. Expanding on the foundational information presented in the preceding sections, the focus now transitions toward an exploration of various alternative approaches aimed at addressing these ongoing concerns. Through a rigorous analysis of each issue identified in the fishbone analysis and the presentation of a diverse array of solutions, the objective is to furnish a comprehensive repertoire of concepts and tactics for adeptly navigating these intricate matters.

6.1. Working Methodology to Identify Alternative Solution

The methodology employed in this chapter adheres to a structured and comprehensive approach designed to confront the challenges in question. The process commences with the introduction of a diverse array of alternative solutions, each strategically tailored to address specific issues previously identified. Through a methodical analysis, an exploration into the strengths and weaknesses of each alternative ensues, illuminating their potential advantages and drawbacks. This comparative investigation facilitates the highlighting of issues that each alternative is most proficient at resolving. Given that no single solution can fully address all root causes, it becomes imperative to assess which alternatives most significantly impact the critical underlying problems.

Following this thorough evaluation, a rigorous assessment framework is implemented. By subjecting the alternatives to a predetermined set of criteria, the objective is to impartially gauge their performance across multiple dimensions. Ultimately, this methodological framework facilitates a well-informed and strategic recommendation, pinpointing the most appropriate alternative that aligns with the client's distinct requirements and objectives.

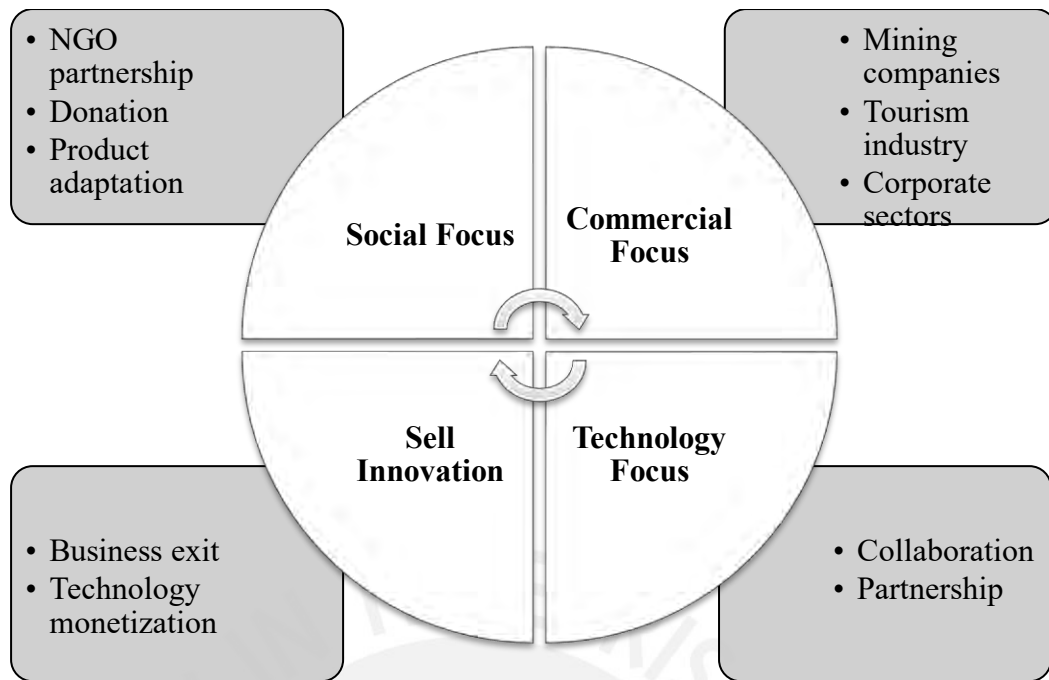


Figure 5. Alternatives for Sanilab

Own elaboration

6.2. Alternative 1: Social Focus

Alternative 1 entails a strategic shift for Sanilab, centering its focus solely on its social objectives rather than catering to commercial clientele. A core element of this approach involves forging robust partnerships with other non-profit organizations, leveraging shared missions and resources to amplify the reach of Sanilab's SaniSystem. Embracing donations and social funding becomes integral to sustain operations and propel growth.

In line with this reorientation, Sanilab must enhance the adaptability of its SaniSystem to address the precise needs of impoverished communities. This includes overhauling its product design, pricing strategy, and distribution model. A primary challenge lies in reshaping the pricing structure, as the current upfront payment required for SaniSystem poses a formidable barrier to entry for financially constrained communities. To harness the inherent advantage of Container-Based Sanitation (CBS) – its lower initial cost compared to water and

sewer-based alternatives (World Bank, 2019) – Sanilab must reconfigure its pricing model to make it more accessible. This might involve installment plans, micro-financing options, or subsidized pricing, aimed at ensuring that even the most financially vulnerable segments can access and benefit from SaniSystem's offerings.

By embracing this alternative, Sanilab stands to intensify its commitment to social impact and broaden its sphere of influence. The strategic focus on NPO partnerships, donations, and tailored product adaptations has the potential to create a more pronounced and sustained effect in addressing sanitation issues in underserved regions.

6.3. Alternative 2: Commercial focus

Alternative 2 involves a strategic pivot for Sanilab, wherein the company shifts its focus exclusively towards commercial clients and departs from its engagement with socially-driven initiatives for impoverished communities. This transformation centers on catering to corporate sectors like the mining industry, which has been a key target for Sanilab's services. However, a comprehensive analysis, including insights from an interview with a mining expert in Peru, underscores the limitations of this singular focus.

While the mining sector presents potential demand for SaniSystem, it becomes evident that relying solely on mining camps might not yield the anticipated results. The mining industry's water requirements, driven by its operations, render the water needed for camps only a fraction of the total demand (A. Rodriguez, personal communication, August 16, 2023). Establishing water supply systems for camps alongside the main mining operations is not a substantial challenge, thus reducing the uniqueness of SaniSystem's value proposition. Furthermore, the costs incurred for sanitation solutions in mining camps are relatively minor compared to the overall expenses of mining operations, making it less critical to seek cost-saving measures in this area.

Moreover, the potential customer base in the mining sector remains limited. With new mining sites emerging infrequently, the irregular demand for sanitation solutions for camps poses a challenge (A. Rodriguez, personal communication, August 16, 2023). Existing mining operations are unlikely to switch their established sanitation systems, further restricting the scope for capturing clients. The insights provided by the mining expert underscore a prevailing lack of significant interest in adopting alternative sanitation systems within the mining sector, dampening the viability of an exclusive focus on this industry (A. Rodriguez, personal communication, August 16, 2023).

To establish a fully commercial approach that ensures sustained profitability, Sanilab must broaden its horizon beyond mining. Exploring other sectors that value the environmental benefits of SaniSystem can be crucial. The tourism industry in Peru, for instance, presents an opportunity to highlight the ecological advantages of SaniSystem, appealing to a different customer base. By positioning SaniSystem as an eco-friendly and sustainable solution for tourism facilities, Sanilab can tap into a potentially more receptive market.

In this alternative, Sanilab faces the challenge of diversification, navigating away from its current mining-focused approach to explore new sectors where its solutions align with the evolving demands of commercial clients. The objective is to create a profitable business model that harnesses the strengths of SaniSystem and its environmental benefits to capture interest from diverse industries beyond mining.

6.4. Alternative 3: Technology focus

Alternative 3 introduces a significant paradigm shift for Sanilab's strategy, centering on a targeted approach that capitalizes on the company's core technological innovation. Instead of persistently pursuing the sale of the comprehensive Sanisystem, this alternative proposes a strategic realignment towards leveraging Sanilab's standout strengths: waste

treatment plants and liquid fertilizer production. This approach entails concentrating efforts on collaborating with other firms in the Container-Based Sanitation (CBS) sector, specifically those offering dry toilet systems, to enhance their offerings with Sanilab's technological advancements.

By homing in on these specialized areas of expertise, Sanilab can tap into a strategic niche, concentrating its resources on refining and advancing the waste treatment plant technology and liquid fertilizer production. This focused approach resonates with Sanilab's founder's technology-oriented inclinations and aligns with the company's core competency. Rather than dispersing resources across multiple fronts, this alternative advocates for a more symbiotic relationship with other CBS companies, wherein Sanilab's unique technology augments their offerings.

The proposed model hinges on forming strategic partnerships and collaborations within the CBS ecosystem. This entails fostering alliances with dry toilet system providers, who can benefit from integrating Sanilab's waste treatment plant technology and liquid fertilizer production capabilities into their solutions. By focusing on technological innovation and offering specialized components that complement existing systems, Sanilab can establish a reputation as a key enabler of enhanced CBS solutions.

In this alternative, Sanilab's emphasis shifts from being a comprehensive product provider to being a strategic technology partner. This approach has the potential to mitigate the market-related struggles the company has encountered in recent years. By narrowing its focus to its core technological strengths, Sanilab can optimize its resources and increase its relevance within the CBS industry, positioning itself as an instrumental player in driving innovation and advancing sustainable sanitation solutions.

6.5. Alternative 4: Business exit

Alternative 4 represents a critical decision point for Sanilab, acknowledging the reality that not all startups achieve success and recognizing the need to bring closure to the existing venture. Despite the inventive nature of SaniSystem and its potential to revolutionize sanitation, it is apparent that the startup has struggled to secure a sustainable foothold in the market. And the reality is that a high number of startups does fail due to the high risk business scenarios they pursue (Cantamessa et al., 2018). With only one completed project over the span of six years and a lack of clear direction regarding target customers and sales strategies, the challenges appear insurmountable.

At this point, it becomes imperative for Sanilab to weigh the costs and benefits of continuing operations versus winding down the startup. Acknowledging that the business model as currently structured may not be viable is an essential step toward making an informed decision. While Sanilab's technological innovation holds value, there's a consideration to explore monetizing the core technology by selling it to a more established entity that can leverage it effectively within their existing operations. This approach could potentially recoup some of the investments made and provide a path for the technology to thrive under different management.

Closing down the startup would involve a complex process of winding down operations, addressing financial obligations, and potentially reallocating resources to other endeavors. While the decision may be emotionally challenging for the founders and stakeholders, it is essential to recognize that entrepreneurship carries inherent risks and not all ventures reach the desired level of success.

Ultimately, Alternative 4 underscores the importance of pragmatism and strategic thinking in the face of market realities. Accepting that the current startup may not be functioning as intended is a pivotal step toward preserving resources, learning from the

experience, and potentially exploring alternative pathways to capitalize on the technological innovation while ensuring a more sustainable and viable outcome moving forward.

6.6. Additional measures

To effectively capitalize on the potential of Alternatives 1 to 3, a comprehensive approach is necessary, integrating a range of additional measures. Reevaluating and readjusting the business plan is crucial to align the chosen alternative with a refined strategic direction, accounting for the specific nuances and objectives that arise. Establishing partnerships that complement the chosen path can provide the necessary support, potentially infusing expertise, resources, and market access to expedite implementation. Collaborative ventures with non-profit organizations, technology experts, or even potential customers can amplify the impact of the chosen direction. Additionally, seeking guidance from a seasoned business mentor can prove invaluable, offering insights, experience, and a fresh perspective that guides the startup's development. This mentorship serves as a cornerstone for fostering growth and navigating potential pitfalls as the company pivots its strategies. By orchestrating a holistic approach that combines the chosen alternatives with these supplementary measures, Sanilab can position itself for a more robust and promising trajectory while making informed decisions that propel the venture toward sustainable success.

6.7. Evaluation criteria

In evaluating the four alternatives presented, we will assess them against a set of key criteria to determine their potential viability and suitability. Feasibility will gauge the practicality of each option, considering the resources required, existing capabilities, and potential hurdles. The criteria of adding value will analyze how effectively each alternative addresses the identified problems and whether it provides substantial benefits to the company and its stakeholders. Risk assessment will weigh the potential downsides and uncertainties associated with each option, particularly in terms of financial, operational, and market-related

risks. Ease of implementation will consider the practical challenges of executing each alternative, encompassing factors such as organizational changes, technological integration, and partner collaborations. Finally, the criterion of innovation will evaluate the degree to which each alternative fosters new ideas and leverages the company's core technological strengths. Through this comprehensive evaluation, we aim to discern which alternative aligns most harmoniously with Sanilab's objectives and has the potential to yield a sustainable and impactful outcome.

All criteria will be weighed equally on a scale of 1-10

Table 4.

Possible Solutions

Criteria	Possible Solutions			
	A1: Social focus	A2: Commercial focus	A3: Technology focus	A4: Business exit
Feasibility	8	7	8	8
Added Value	6	7	8	0
Risk Avoidance	7	5	4	10
Ease of Implementation	8	4	5	8
Innovation	7	6	8	4
Total Score	36	29	33	30

Upon thorough evaluation, the range of presented alternatives emerges with a relatively consistent level of viability, indicating that multiple paths forward could yield promising outcomes for Sanilab. However, Alternative 1, centering on a social focus, stands out as the strongest contender, demonstrating commendable performance across all evaluation criteria. This option aligns well with the identified root problems, including market entry challenges, customer focus ambiguities, and the lack of a clear growth target. While other alternatives showcase significant strengths in certain dimensions, they also

exhibit noticeable shortcomings in others. Recognizing the client's preferences and strategic vision, a decision has been made to prioritize Alternative 1. The client's inclination towards Alternative 3, which emphasizes a technological focus, underscores their recognition of its merits. However, acknowledging the complexities of fully outsourcing sales and doubting its realistic implementation, the client has opted to pursue Alternative 1 as the primary approach, which marries technological innovation with a socially driven mission.

6.8. Conclusions

In this chapter, we embarked on a comprehensive exploration of diverse alternatives aimed at addressing the intricate challenges faced by Sanilab. By dissecting the root problems encompassing market entry struggles, environmental challenges, lack of direction and insufficient management we charted a course to rectify these obstacles. Four distinctive alternatives were meticulously presented, each embodying a distinct strategic trajectory to navigate the complex landscape.

Through a rigorous assessment process grounded in multifaceted criteria—feasibility, value addition, risk, ease of implementation, and innovation—we conducted an in-depth examination of each alternative's potential. It became evident that the presented alternatives, though varied, held a remarkably balanced level of viability, each embodying specific strengths and limitations. Notably, Alternative 1, underscored by a focus on social impact, emerged as the highest-ranking choice, effectively addressing a spectrum of challenges while aligning with the company's overarching mission.

Acknowledging the client's perspectives and preferences, we concluded that Alternative 1, with its dedication to social responsibility and sustainable change, should be the focal point of Sanilab's renewed strategy. Although other alternatives had merits and resonated strongly in certain aspects, the chosen path embodies a harmonious fusion of innovation, inclusivity, and strategic repositioning. As Sanilab embarks on this

transformative journey, propelled by a commitment to social progress and a well-defined roadmap, it stands poised to reshape its trajectory and transcend the barriers that have hindered its growth. This pivotal decision encapsulates not only a strategic choice, but a testament to the adaptability and determination that characterize entrepreneurial endeavors.



Chapter VII: Proposed Solution

Our proposed solution entails a strategic transformation for Sanilab, with an exclusive focus on advancing social objectives. This shift emphasizes forging robust partnerships with other non-profit organizations (NPOs) to broaden the outreach of Sanilab's SaniSystem. The sustainability and growth of this endeavor will heavily depend on donations and social funding.

To effectively align with this new direction, Sanilab has devised a comprehensive plan to customize its SaniSystem to cater to the specific needs of impoverished communities. This comprehensive overhaul encompasses the redesign of existing products, a reevaluation of pricing strategies, and a strategic adjustment in distribution methods. Overcoming the substantial obstacle of high upfront costs is imperative, and Sanilab is committed to making its sanitation solutions more economically accessible through mechanisms such as installment plans, micro-financing options, or subsidized pricing.

By embarking on this transformative journey, Sanilab seeks to reinforce its dedication to making a meaningful social impact. This involves close collaboration with NPOs, actively soliciting donations, and adapting its product offerings to effectively address the pressing sanitation challenges faced by underserved regions.

A key root cause of Sanilab's challenges lies in its market entry strategy. By redirecting its focus towards community support, Sanilab can optimize its resource allocation and concentrate on areas with the most potential impact. Additionally, this strategic shift enhances the likelihood of securing funding from NPOs, as the emphasis on social impact aligns with their objectives.

Addressing the lack of a robust management structure is crucial for sustained success. Obtaining financial resources from an NPO is an ideal opportunity to invest in the expertise needed to optimize business operations. Also, hiring a seasoned business expert who can

work within the company for an extended period will significantly improve management practices.

Financial resources will also play a crucial role in navigating the competitive landscape in which Sanilab operates. Realizing the owner's idea of lending SaniSystem products for a specified duration can become a reality. However, establishing a robust business network requires more than just financial resources; it necessitates the owner's active efforts in forging strategic connections.

Moreover, financial resources provide Sanilab with the capacity to plan strategically and develop a clear direction for the future. This enables the company to set achievable goals and milestones for more substantial impact. Another root cause that can be addressed with financial resources is education and awareness. Having the financial means to hire full-time employees, preferably individuals with a business background, can provide reliable and sustained support. These individuals can impart valuable insights to the company.

Furthermore, Sanilab's marketing efforts have suffered from a lack of attention to detail and current information. Financial resources can eliminate this issue by enabling the recruitment of a marketing expert who can refine strategies and ensure that the company effectively communicates its mission to the public.

In conclusion, our proposed solution represents a comprehensive approach to addressing the root causes of Sanilab's challenges. By emphasizing social objectives, partnering with NPOs, adapting products for community needs, and obtaining financial resources, Sanilab can effectively eliminate these root causes and make a lasting impact on sanitation issues in underserved regions. This strategic shift positions Sanilab to fulfill its mission and significantly improve the lives of those in need.

If the current solution proves to be unsustainable, the alternative with the second highest score should be explored. This alternative involves Sanilab specializing in waste

treatment plants and liquid fertilizer production while collaborating with other CBS companies, particularly those offering dry toilet systems, to incorporate Sanilab's technology into their products. An illustrative instance is Sanima, the prominent NPO in the Lima market. This shift towards specialization and partnership would establish Sanilab as a significant contributor to enhancing CBS solutions, enabling it to tackle recent market challenges and emerge as a leader in driving innovation for sustainable sanitation solutions.

Upon the client's request, we conducted an extensive research initiative aimed at providing a comprehensive understanding of potential NPO partners within the landscape. In response to their initial project funding from the German NPO Adra, we conducted a thorough examination of NPOs from Germany currently involved in active projects in Peru. Furthermore, we included NPOs with ongoing projects in Latin America or Central America in this analysis.

Acknowledging the significance of a global perspective, we also carried out a detailed analysis of NPOs providing funding within Peru, as well as NPOs from North America. This comprehensive analysis adhered to the previously mentioned criteria, encompassing NPOs operating in Latin America or those already engaged in projects in Peru.

The results of our research, designed to enhance the client's understanding of potential NPOs for partnership, can be found in Appendix D. To provide a better overview of the company, we have designed a flyer with the most important information about the social startup in English. Since most of the information provided was in Spanish, this will make it easier for potential investors to get a first impression of the business idea behind Sanilab. The flyer is available in Appendix B.

7.1. Conclusion

The proposed solution for Sanilab involves a strategic pivot towards advancing social objectives through partnerships with non-profit organizations (NPOs) and reliance on

donations and social funding. This transformation includes tailoring the SaniSystem for impoverished communities, addressing cost barriers, and emphasizing social impact. Sanilab faces challenges in its market entry strategy, management structure, and financial resources. The solution aims to optimize resource allocation, secure NPO funding, invest in expertise, and improve marketing efforts. Financial resources are essential for achieving Sanilab's goals, including product lending, networking, education, and marketing enhancements. This holistic approach aims to address challenges and make a lasting impact on sanitation issues in underserved regions. If the current approach proves unsustainable, an alternative involving specialization in waste treatment plants and collaboration with other CBS companies is proposed. This shift seeks to position Sanilab as an innovator in sustainable sanitation solutions. Extensive research has identified potential NPO partners, primarily from Germany and North America, involved in projects in Peru and Latin America (see Appendix D). An English-language flyer (Appendix B) offers essential information about Sanilab to potential investors, increasing the company's visibility.

Chapter VIII: Implementation Plan

This implementation plan outlines a strategic shift for Sanilab, focusing its efforts on driving social impact by centering its operations on the needs of impoverished communities. This plan delineates the steps required to transition Sanilab from a commercial-oriented entity to a mission-driven organization dedicated to improving sanitation conditions and fostering social empowerment. Also, it outlines the comprehensive strategy for effecting this transformation, delineating key steps, timelines, and resources required to transition Sanilab into a driving force for positive social change.

The proposed solution not only seeks to address the lack of funding hindering Sanilab's mission but also aims to redefine the organization's purpose in a manner that resonates with its investors, partners, and beneficiaries. By repurposing its operations to prioritize social impact over profit generation, Sanilab must forge meaningful partnership to foster sustainable growth. Through this shift, Sanilab intends to harness the power of collaboration, innovation, and community engagement to overcome the persistent challenges in sanitation access, water conservation, and agricultural sustainability. This implementation plan serves as a roadmap for realizing this vision, offering a comprehensive guide to effectively execute each facet of the proposed strategic transformation.

8.1. Identified phases

Based on the solution selected and what was discussed with Sanilab's CEO, Raúl Muñoz, the following phases are outlined to increase financial support that will help the communities to have the SaniSystem.

8.1.1. Strategy Refinement

The initial phase centers in the refining of Sanilab's strategy to harmonize it with its emphasis on social impact. Key facets include revisiting and revising the mission and vision statements to strongly emphasize Sanilab's commitment to support local communities. This

will help to start operations, marketing, and public relations with the new focus. During this phase, Sanilab will undertake the following key actions:

Business Plan Development (2 months): Drawing inspiration from Osterwalder et Al.'s Business Model Canvas (2009), the strategy refinement process begins with a comprehensive evaluation of Sanilab's value proposition. This involves identifying the unique value that Sanilab can offer to its new target audience, which now includes NPOs and social impact partners. The business plan will be revamped to reflect the refined value proposition, encompassing crucial elements such as cost structure, revenue streams, and resource allocation.

Re-branding (3 months): As Sanilab shifts its focus towards collaborating with NPOs and addressing social challenges, it becomes imperative to rebrand the organization's identity. The rebranding process will be driven by the new objectives captured in the business plan, aiming to position Sanilab as an appealing partner for non-profit entities internationally. The visual identity, messaging, and communication strategies will all be redesigned to resonate with potential partners and collaborators.

Marketing (3 months): An integral part of the strategy refinement involves formulating a strategic marketing plan. This plan will include an assessment of the target audience, a detailed analysis of the competition within the social impact space, and the development of a compelling positioning strategy in social media and press. Essential actions will include the constant posting in Sanilab's social media and make a more informative website, including the pricing, to attract potential investors and partners. Sanilab's messaging will emphasize its commitment to supporting local communities, sustainable solutions, and collaborative partnerships.

Financial Analysis and Resource Planning (3 months): As Sanilab shifts to a social focus, there is a need for a thorough financial analysis to understand the resource

requirements for executing the new business model. This analysis will help determine the necessary investments, budget allocations, and funding Sanilab needs from their future partners. Collaborations with financial experts are crucial to ensure accurate projections and financial sustainability.

A comprehensive evaluation of potential international partners that aligns with Sanilab's core values and objectives has started and the consulting team is progressing with the data collection. Additionally, a comprehensive financial analysis is necessary because it will ascertain the requisite resources to facilitate this strategic realignment.

8.1.2. Cultivating Collaborative Partnerships

In this phase, after refining the strategy, Sanilab will channel its focus and dedication towards nurturing collaborative partnerships that align with its social impact focus. The dialogues with potential collaborators will serve as avenues for knowledge exchange, resource sharing, and the exploration of innovative solutions. As for today, the consulting team contacted collaborators that offered help in this project. This phase represents a crucial point where Sanilab actively seeks to establish connections that amplify its mission and enhance its reach. During this phase, the following key actions will be undertaken:

Networking (8 months): Recognizing the power of collaboration, Sanilab will actively engage with universities, incubators, accelerators, and other relevant organizations that share a resonance with its newly defined mission. By actively participating in workshops, dialogues, and diplomatic engagements, Sanilab seeks to foster alliances with international entities that align with its core values. This collaborative network can provide valuable insights, expertise, and resources that propel Sanilab's initiatives forward.

Stakeholder engagement (6 months): To realize impactful partnerships, Sanilab will deeply engage with potential NPO collaborators. This engagement involves a thorough understanding of the specific requirements and expectations that these organizations may

have to become integral partners in Sanilab's journey. Simultaneously, Sanilab will explore avenues for securing funds that can fuel the implementation of its SaniSystem projects. In practical terms, this could involve comprehensive meetings with different organizations to explore the potential for collaborative projects. In Chapter VII, we presented a list of possible partners to ease Sanilab's research and focus on the requirements.

Market Analysis and Needs Assessment (6 months): Collaborate with potential partners to conduct thorough market analysis and needs assessments. Identify regions or communities that would benefit most from Sanilab's SaniSystem and tailor the solution to address the unique challenges that are in Peru. Through effective networking, stakeholder engagement and strategic participation, Sanilab will contribute to transformative change and the realization of its vision for sustainable sanitation solutions.

8.1.3. Project Implementation and Monitoring

In this phase, Sanilab will collaborate closely with partnering NPOs, international entities, and local communities to execute pilot projects and initiatives that are tailored to specific regions and their specific requirements and challenges. The execution of these projects involves a multi-faceted approach that encompasses the following key components:

Pricing (1 month): Sanilab will strategically determine pricing structures for its SaniSystem services, taking into account the unique economic landscapes and financial capacities of the communities they aim to serve. The pricing model will be designed to strike a balance between accessibility for underserved populations and the financial sustainability of Sanilab's initiatives.

Planning to ensure implementation (5 months): A comprehensive implementation plan will be crafted to ensure the successful execution of each initiative. This plan will outline the key steps, timelines, resource allocation, and roles and responsibilities for all

stakeholders involved. To provide a clear visual representation of the project timeline and tasks, a Gantt chart will be developed, offering a roadmap for efficient project management.

Monitoring (6 months): Regular monitoring and evaluation mechanisms will be put in place to collect data on various performance indicators. These data-driven insights will facilitate real-time assessment, allowing for evidence-based decision-making and timely adjustments to ensure the alignment of projects with their intended outcomes.

Training (6 months): A dedicated training program will be implemented to equip local communities with the necessary knowledge and skills to maintain and operate the SaniSystem effectively. Training will encompass technical aspects, maintenance procedures, and best practices for sustainable sanitation practices. The training must attract as many members of the community as they can, so they have to offer training at different hours, considering that most of the people work during the day. Based on the interview conducted with a member of the Pachacamac community, at least 10 people have to be well-trained to maintain rotation in the fertilization plant. We recommend a better understanding and mold the training based on the community needs because the training of the Pachacamac people was not successful as was mentioned in the interview. The empowerment of local communities will be instrumental in achieving long-term success.

Customer satisfaction, feedback and support (at least a year): As projects are implemented, continuous efforts will be made to gather feedback from users and communities. This feedback will be invaluable in refining and improving the SaniSystem's features and services, ensuring that they remain responsive to the evolving needs of the communities they serve. In addition, Sanilab still needs to give support and maintenance to the system, as long as the community might need it.

8.1.4. Scalable Growth and Regional Impact

Having established successful implementations through their first customers, Sanilab will embark on a trajectory of scalable growth to extend its influence in the medium and long term.

Medium term (3 – 4 years): Building upon the positive outcomes of their initial pilot projects, Sanilab will systematically expand its operations across Peru. Leveraging the experience gained from the successful implementation of its initiatives, Sanilab will fine-tune its processes, operational strategies, and engagement models to optimize impact and reach. This period will witness the organization's growing presence and influence in different cities within the country, as it collaborates with a diverse array of communities, stakeholders, and partners to bring improved sanitation solutions to underserved areas.

Long term (5+ years): Beyond the medium term, Sanilab envisions a broader expansion that extends its impact beyond national borders, particularly in the Latin American market. Collaborative partnerships will be instrumental in propelling the organization's global reach. Sanilab will actively seek and cultivate cross-border collaborations, leveraging the strengths and expertise of international organizations, NPOs, and institutions. By participating in cross-border development contests and initiatives, Sanilab will access new avenues for funding, knowledge exchange, and resource sharing. This approach will facilitate the acceleration of its expansion into new regions, ensuring that innovative sanitation solutions reach even more underserved communities.

It will be important to Sanilab's success in this phase its ability to secure financial support from international grants, donations, and partnerships. These financial resources will provide the necessary fuel for the organization's growth trajectory, allowing it to invest in technology enhancements, capacity building, and the establishment of a sustainable operational infrastructure. With a dynamic approach to expansion and a commitment to

collaboration, Sanilab is prepared to make a lasting regional impact in the field of sustainable sanitation.

This implementation plan outlines a systematic approach for Sanilab's evolution into a globally conscious entity, adept at addressing sanitation inequalities while fostering cross-border empowerment. By navigating these distinct phases with diligence and resolute dedication, Sanilab is prepared to actualize its vision of making accessible and sustainable sanitation solutions a global reality, thereby uplifting communities in need around the world.

8.2. Activity Gantt

The Gantt chart serves as a visual representation of the meticulously identified phases and critical activities that constitute Sanilab's strategic roadmap. It encapsulates the comprehensive journey that Sanilab is set to undertake, providing a structured overview of the various stages from strategy refinement to scalable growth (Team Gantt, n.d.). However, it's important to note that the specific timelines indicated on the Gantt chart are not set in stone; rather, they possess a degree of flexibility to accommodate the collaborative nature of partnerships with NPOs and potential funding sources.

Note: Own Elaboration



8.3. Implementation Team

The successful execution of Sanilab's comprehensive implementation plan relies on the expertise, dedication, and collaborative efforts of a diverse and skilled implementation team. This team is composed of individuals with varied backgrounds, each bringing unique perspectives and competencies that collectively contribute to the realization of Sanilab's mission. The implementation team comprises several key roles, each playing a crucial part in different phases of the plan:

8.3.1. Executive Leadership

The CEO, as the executive leader, sets the strategic direction for Sanilab's implementation plan. This includes decision-making, prioritization of initiatives, and alignment of actions with the organization's mission and vision. The executive leadership oversees resource allocation, manages partnerships, and ensures that the plan's objectives align with Sanilab's broader goals, including the development and distribution of dry toilets and fertilizers.

8.3.2. Project Manager

The Project manager plays a central role in translating the strategic vision into actionable projects. He or She is responsible for planning, organizing, and executing the various phases of the plan, from strategy refinement to scaling and growth. The Project manager collaborates closely with cross-functional teams, stakeholders, and partners to ensure the timely and effective implementation of initiatives. Considering that Sanilab does not have a fixed team, the project manager will be needed once the partnership is settled.

8.3.3. Public Relationship Experts

These professionals are adept at building and nurturing relationships with external entities, including NPOs, international organizations, governments, and other stakeholders.

Their role involves identifying potential partners' interests in dry toilet installations, eco-fertilizer distribution, and social initiatives.

8.3.4. Monitoring and Evaluation Specialist

These professionals focus on the measurement and assessment of the impact of the SaniSystem as a whole. They develop monitoring frameworks, design data collection methods, and analyze outcomes to provide insights for informed decision-making.

8.3.5. Local Implementation Coordinators

In regions where Sanilab's SaniSystems are deployed, local implementation coordinators play a vital role in bridging cultural, social, and contextual gaps. They work closely with community leaders, local governments, and beneficiaries to ensure that projects are contextually relevant, well-received, and sustainable.

8.4. Key Success Factors

8.4.1. Enablers

Submit Clear Vision and Commitment: A clear and compelling vision of transitioning towards a social-focused approach should be shared throughout the organization. This commitment will foster unity, motivate teams, and attract partners who resonate with the mission, ensuring everyone is aligned toward the same goal.

Strong Partnerships: Collaborating with international governments, NPOs, and development agencies will bring diverse expertise, networks, and resources to the table. These partnerships can boost the implementation of projects, extend the organization's reach, and enhance credibility.

Effective Monitoring and Evaluation: Implementing robust monitoring and evaluation mechanisms allows Sanilab to track progress, measure impact, and identify areas

for improvement. This data-driven approach enhances accountability and supports evidence-based decision-making.

Financial Sustainability: Developing a diverse funding strategy reduces dependence on a single source. This might include seeking grants, forming strategic partnerships, exploring impact investment opportunities, and fostering a community of investors that support social startups.

8.4.2. Risks

Submit Resource Constraints: Depending heavily on external funding sources might lead to uncertainties in funding availability or delays in disbursement. Planning for contingencies and exploring alternative funding options will be crucial.

Complex Collaboration Dynamics: International collaborations can be intricate due to the language barrier, varying regulatory frameworks, differing priorities, and decision-making processes. Effective communication, shared goals, and clear roles are vital for successful partnerships.

Sustainability of Impact: Ensuring that project impacts are sustained beyond the initial phases requires integration into local systems, capacity-building, and community ownership. Failure to do so might lead to a lack of lasting change.

Shift in Organizational Culture: Transitioning from a commercial to a social orientation requires a change in mindset and practices. Employees and stakeholders accustomed to profit-focused strategies may resist, making change management and communication essential.

Competing Priorities: Balancing social impact with operational viability can be challenging. Decisions might need to be made regarding which projects to prioritize and how to allocate resources effectively.

Political instability: Operating in Peru exposes Sanilab to potential political risks and instability that could disrupt project implementation or lead to changes in regulations. Shifts in government policies or political unrest might affect funding, partnerships, or even the overall feasibility of projects (El Comercio; 2022). Conducting thorough risk assessments and contingency planning for different political scenarios is crucial to navigate this challenge.

Limited country infrastructure: The lack of sufficient infrastructure in certain regions of Peru could pose challenges in project implementation and scaling. Inadequate transportation, communication and unstable soil might hinder Sanilab's ability to effectively deliver its solutions to target communities (Castillo, J. I., Camero, A., & Coronado, M.; 2023: 15). Sanilab will need to assess and address these infrastructure gaps through strategic planning to ensure the successful execution of its initiatives.

Inflation: Fluctuations in Peru's local economy, including inflation and economic volatility, could impact the cost of operations, procurement, and funding availability (Bloomberg, 2023). These economic factors might affect the affordability of Sanilab's solutions for communities and could influence financial planning and pricing strategies. Sanilab will need to closely monitor economic trends and adapt its strategies accordingly to mitigate the impact of inflation on its initiatives (Alvarez, J; 2023).

8.5. Resources and Financial Analysis

The successful execution of our implementation plan to enhance sanitation conditions and empower underserved communities through the implementation of the SaniSystem relies heavily on comprehensive financial planning. In our case, we have gathered valuable data from Sanilab's previous pricing study, which, while informative, presents some limitations. These limitations make our team have careful consideration to ensure our budget proposal aligns perfectly with our mission and objectives.

While the data from Sanilab's previous pricing study serves as an important resource, it offers only a snapshot of the financial landscape. Our approach will primarily focus on the investments required to initiate the transformation of their business, with a specific emphasis on sections 8.1.1. and sections 8.2.2. In the case of the first phase, strategy refinement, Sanilab will need S/ 60,150 to re-establish itself as a new social business, as detailed in Appendix E.

Section 8.2.2. considers expenses related to networking events, including transportation, meals, and other associated costs. These costs are essential for building relationships and collaborations with potential partners and stakeholders. In this case, S/ 22,000 is needed in this period of 8 months.

In the context of section 8.2.3., the investments are estimated based on the number of hours dedicated to work in that area. Ideally, each worker will be involved in 1 to 2 projects initially. The estimation is of S/ 19,000. Additionally, we have a contingency fund of 10% to address unexpected emergencies or challenges that may arise during the implementation process.

In total, our estimated budget for a period of two years to relocate the business and begin its transformation is approximately S/ 250,286. Please note that this estimate does not include funding and production costs due to missing data. For precise figures and a detailed breakdown of expenses, please refer to Appendix E.

8.6. Conclusions

This chapter presents Sanilab's journey with a new focus. This plan outlines a strategic shift that transcends commercial goals, highlighting a commitment to making positive change a global reality. By repurposing operations to align with social objectives, Sanilab aims to foster collaboration, innovation, and community engagement, ultimately

effecting lasting change in sanitation access, water conservation, and agricultural sustainability.

The proposed solution not only aims to overcome the funding obstacle but also seeks to redefine Sanilab's identity in a way that resonates with investors, partners, and beneficiaries. Through meaningful partnerships, Sanilab envisions sustainable growth that aligns with its mission. This implementation plan serves as a road map, offering a detailed guide to execute each phase of the strategic transformation. It outlines the key actions, timelines, and resource requirements necessary to position Sanilab as a strong social business. The Gantt chart is presented as a visual representation of the meticulously identified phases and critical activities that constitute Sanilab's strategic roadmap. Also, it provides flexibility to accommodate potential adjustments due to the collaborative nature of partnerships with NGOs and potential funding sources.

The implementation plan presented identifies key success factors and potential risks, underscoring the importance of clear vision, strong partnerships, effective monitoring, and financial sustainability. The identified risks underscore the challenges inherent in this transformative journey, within and outside Sanilab. These risks must be managed through thorough risk assessment, contingency planning and continuing monitoring of political, social and economic scenarios.

The success of this implementation plan relies on the effective allocation of resources. In this regard, the estimated budget for the initial two years is approximately S/ 250,286, focusing on the salaries of fixed workers and trainees they need to function as a social business. Due to lack of information received, the production and implementation costs couldn't be estimated.

In conclusion, this implementation plan outlines a comprehensive plan for Sanilab to evolve into a socially focused entity that empowers communities through sustainable sanitation solutions. By navigating these phases with determination, Sanilab will turn its vision into reality, elevating communities and setting a precedent for responsible corporate social responsibility.



Chapter IX: Expected Results

In this chapter, the focus shifts towards anticipating the outcomes of the proposed solution for Sanilab's challenges. Delving into the expected results, not only will the positive changes of this solution be conceptualized, but also to establish a robust framework for monitoring, verifying, and measuring the attainment of these outcomes. Aligned with the implementation plan previously outlined, the following explores how the solution will materialize into tangible impacts, and how it will rigorously be assessed in its realization. By integrating both the foresight and the methods of assessment, a comprehensive overview of the transformative journey that lies ahead for Sanilab will be provided.

9.1. Expected Results

Key Performance Indicators (KPIs) serve as vital focal points for evaluating the success and impact of an organization's initiatives. In the context of Sanilab's transformation into a socially focused business, KPIs play a pivotal role in quantifying the outcomes of its efforts. To comprehensively assess its performance, the KPIs have been categorized into four distinct dimensions: environmental, social, operational, and financial. This categorization allows for a holistic evaluation that spans across the various facets of Sanilab's operations, enabling a nuanced understanding of the organization's effectiveness in achieving its social impact goals. Each category consists of specific indicators that collectively contribute to measuring Sanilab's progress, ensuring a well-rounded and comprehensive assessment of its transformative journey. There is one primary indicator for each category, with the rest being additional complementary indicators in each category. All indicators are directed at the time span of the next year, while many of them also would apply also to a longer time period. However, to verify that the strategic shift is being implemented, the short to medium time period of a year is most crucial initially.

9.1.1. Environmental KPIs

1. Reduction in Open Defecation (primary): This KPI measures the extent to which Sanilab's initiatives have contributed to reducing open defecation practices within the communities it serves. It reflects the organization's success in implementing sustainable sanitation solutions that lead to improved hygiene practices and a cleaner environment. A decrease in open defecation signifies a positive impact on local ecosystems and a reduction in the risk of waterborne diseases. Sanilab should aim for a reduction of open defecation by at least 95% after the implementation of its SaniSystem.

2. Water Source Protection: This KPI assesses Sanilab's efforts in safeguarding local water sources from contamination caused by inadequate sanitation facilities. By analyzing the quality of water in proximity to Sanilab's interventions, the organization can gauge its contribution to preserving water sources and mitigating pollution. Impact on water sources will depend on distance, type, duration, and other factors so it will need to be assessed on a case-to-case basis, but quality of water should be improving overall after implementation.

3. Waste Reduction: Measuring waste reduction tracks the decrease in waste generated from open defecation, which can otherwise contribute to environmental pollution. Sanilab's interventions should result in a reduction in the amount of waste improperly disposed of in open areas, helping to maintain cleaner surroundings. In alignment with open defecation human waste disposal should be reduced by at least 95%, meaning that the conversion of human waste to fertilizer is functioning and properly used. Waste is transported there and then turned into fertilizer to establish a circular economy.

4. Water and Soil Quality Improvement: This KPI evaluates the impact of Sanilab's initiatives on improving the quality of local water bodies and soil. It examines factors such as decreased contamination levels in water sources and improved soil health due to reduced

waste and fecal matter discharge. Similar to water source protection this will need to be assessed on a case-to-case basis, depending on the general condition of soil and water and the area and accounting for other influencing factors. However, the quality of both should be overall improving over time after the implementation of SaniSystem. This also requires Sanilab to conduct soil and water tests in regular intervals to verify this impact.

The environmental KPIs collectively reflect Sanilab's dedication to fostering ecologically sustainable solutions. These indicators underscore the organization's commitment to addressing the environmental consequences of inadequate facilities. By achieving positive outcomes in this area, Sanilab demonstrates its capacity to drive positive change while promoting the overall well-being of communities and their surrounding environments.

9.1.2. Social KPIs

1. Access to Improved Sanitation (primary): This KPI measures the extent to which Sanilab's initiatives have improved access to proper sanitation facilities within the targeted communities. It reflects the organization's success in addressing a fundamental human need and enhancing the overall quality of life for community members. The increase in access signifies progress in reducing health risks associated with inadequate sanitation. As the system is designed for whole communities, everybody in these communities should then also have access to it, as it otherwise might foster further conflict. Therefore, the aim should be to grant access to improved sanitation to 100% of the population (also as extra individual toilets are not the significant cost factor).

2. Health and Hygiene Awareness: Measuring health and hygiene awareness assesses the effectiveness of Sanilab's educational programs in promoting healthy behaviors and hygiene practices within the communities. This KPI reflects the organization's impact on changing attitudes and behaviors, ultimately leading to better health outcomes. It will require

qualitative evaluations (ideally before or after or in certain intervals) with the users to measure how their awareness and practices of sanitation have changed. Assuming low sanitation standards in the locations where SaniSystem will be installed, Sanilab should aim for a significant increase in sanitation awareness and practices for 90% of users.

3. Community Empowerment: This KPI evaluates the degree to which Sanilab's interventions empower local communities to actively engage in addressing their sanitation needs. It reflects the organization's success in fostering a sense of ownership and self-reliance among community members, contributing to sustainable development. This again will depend on a qualitative assessment of how communities view their own development after the implementation of SaniSystem and the impact they contribute to it (as there are of course many other influencing factors). Beyond that a general economic analysis of communities with SaniSystem can be conducted to compare their economic prowess and livelihood before and after the implementation of the system, also compared to other similar communities without SaniSystem.

4. Gender Equity Improvement: Measuring gender equity improvement assesses whether Sanilab's initiatives have led to a more equitable distribution of sanitation benefits, particularly for females. This KPI reflects the organization's commitment to addressing gender disparities in access to sanitation and ensuring that solutions cater to the specific needs of all genders. This can be measured by assessing females' sense of safety as well as health implications in the form of sanitation related diseases and their frequency. Sanitation related diseases like diarrhea and infections (Prüss et. al., 2002) should be reduced by at least 50%.

The social KPIs collectively highlight Sanilab's dedication to enhancing the well-being and livelihoods of the communities it serves. These indicators underscore the organization's role in not only providing tangible solutions but also fostering positive social

change, community empowerment, and a more equitable distribution of benefits. By achieving positive outcomes in these areas, Sanilab demonstrates its capacity to drive meaningful societal transformation.

9.1.3. Organizational KPIs

1. Staff growth (primary): This KPI evaluates Sanilab's success in recruiting and being able to afford full-time staff members as well as retaining long-term volunteers. It reflects the organization's ability to create a positive work environment, offer competitive compensation, professional growth opportunities, and a sense of purpose, ultimately contributing to a more stable and effective workforce. It can be simply measured by counting the number of employees. Through establishing strong partnerships and improving sales, Sanilab should have at least three full-time employees by the end of 2024 coupled with dedicated volunteers.

2. Project Completion Timelines: Measuring project completion timelines assesses Sanilab's efficiency in executing its initiatives within defined timeframes. This KPI reflects the organization's project management capabilities and its ability to deliver timely results, crucial for maximizing impact and efficiently allocating resources. At least 80% of projects should be completed within the scheduled timeframe.

3. Partnership Engagement: This KPI evaluates the effectiveness of Sanilab's collaboration efforts with other NPOs, government agencies, and local stakeholders. It reflects the organization's capacity to build and maintain strategic partnerships that enhance its reach, resources, and collective impact. Ways to measure this include the number of partnerships, the number of collaborative projects and the duration of partnerships.

4. Innovation in Solutions: Measuring innovation in solutions quantifies Sanilab's ability to develop creative and effective approaches to sanitation challenges. This KPI reflects the organization's commitment to continuous improvement and its capacity to adapt to

evolving needs and contexts. It can be quantified by measuring spending in R & D and product updates/upgrades.

The operational KPIs, including the staff-related measure, collectively underscore Sanilab's proficiency in executing its initiatives, fostering collaborations, and cultivating a supportive work environment. These indicators highlight the organization's operational excellence, innovation, partnership-building, and commitment to building skilled staff. By achieving positive outcomes in these areas, Sanilab not only enhances its impact on communities but also cultivates a strong foundation for sustained growth and success.

9.1.4. Financial KPIs

1. Funding Diversification (primary): Measuring funding diversification assesses the distribution of financial resources from various sources, such as grants, donations, and social investments. This KPI reflects Sanilab's financial resilience and its ability to sustain operations through a balanced mix of funding streams. So outside of its operational income through the sale of Fortyplant and Sanilab's SaniSystem they should establish at least three diverse sources of funding like grants, NPO funding or business investors.

2. Cost Efficiency: Measuring cost efficiency evaluates how effectively Sanilab allocates resources to achieve desired outcomes. This KPI reflects the organization's ability to minimize wastage, optimize expenses, and maximize the impact of each dollar spent. Sanilab needs to consider its break-even point and set sales targets that ideally make them self-sufficient quickly. Also scaling will be highly relevant, as CBS systems become more cost efficient as they grow (Coates & Gray, 2020).

3. Revenue Generation: Tracking revenue generation assesses Sanilab's success in securing donations, grants, and social investments to support its initiatives. This KPI reflects the organization's capacity to attract financial support and invest in impactful projects. So indicators like ROI (return on investment) are extremely important to see how well Sanilab is

able to use their money. The financial KPIs collectively underscore Sanilab's financial stability, resource management, and ability to attract funding. These indicators highlight the organization's financial resilience, efficiency, and its capacity to ensure sustainable operations. By achieving positive outcomes in these areas, Sanilab strengthens its ability to drive social impact and create lasting change.

9.2. Expected future situation

In a future where Sanilab manages to perform well across all the mentioned Key Performance Indicators (KPIs), the organization embodies its commitment to social impact and lasting change. Through its diligent efforts, it has evolved into a formidable presence in the field of sanitation solutions, providing a healthier and brighter future for the communities it serves.

Sanilab's interventions have notably curtailed open defecation rates, instilling improved sanitation practices within these communities. The organization's focus on safeguarding local water sources has proven effective, while its strategies for waste reduction have contributed to environmental cleanliness. Consequently, both water and soil quality have witnessed substantial improvements, leaving a lasting positive mark on the environment.

Across society, the impact is transformative and access to improved sanitation facilities is no longer an aspiration but a reality, fundamentally altering the lives of the communities Sanilab engages with. The heightened awareness of health and hygiene practices has translated to better health outcomes and reduced instances of preventable diseases. With the support and empowerment provided by Sanilab, communities have taken ownership of their futures, actively participating in shaping their development. The organization's tailored solutions have led to advancements in gender equity, ensuring the specific needs of women and girls are met.

Operational excellence has become synonymous with Sanilab's endeavors. Its projects are executed seamlessly within established timelines, reflecting its adept project management. Strategic partnerships extend the organization's reach, amplifying its impact through collaborative endeavors. Continuous innovation remains a core principle, adapting solutions to stay relevant amid evolving circumstances.

A motivated workforce contributes significantly to Sanilab's triumphs. The organization's commitment to staff well-being has fostered a conducive work environment, retaining skilled professionals who share a deep investment in Sanilab's mission. Financial resilience highlights Sanilab's sustainability. The diversified funding sources provide a sturdy financial footing, complemented by resource-efficient practices. Revenue streams flow consistently, ensuring the necessary financial backing to expand impactful initiatives.

Looking ahead, should business continue to thrive in Peru in the coming years, Sanilab envisions the prospect of internationalization. Starting within South America, the organization's reach could broaden regionally and eventually extend beyond continental borders. This aspiration mirrors Sanilab's vision to become a beacon of progress not just within local communities but also across borders, leaving an indelible mark on the global stage.

9.3. Conclusion

In culmination, the exploration of the expected results arising from Sanilab's proposed solutions unveils a visionary pathway toward impactful transformation. By employing a comprehensive array of Key Performance Indicators (KPIs) across environmental, social, operational, and financial domains, the organization is poised to catalyze positive change on multiple fronts.

Through careful attention to environmental KPIs, Sanilab foresees a future where open defecation diminishes, water sources remain untainted, waste reduction contributes to cleaner surroundings, and the overall quality of water and soil flourishes. This ecological progress parallels the social realm, where communities experience improved access to sanitation, heightened health awareness, and empowered ownership of their well-being. Additionally, gender equity is prioritized, reinforcing Sanilab's commitment to inclusivity. Operational finesse propels Sanilab's endeavors, as projects are executed within stipulated timelines, partnerships thrive, and innovative solutions continue to emerge. Staff engagement is nurtured, leading to a motivated workforce that shares the organization's dedication to its mission. Financially, Sanilab's diversified funding sources and cost-efficient practices foster sustainability, ensuring continued impact and growth.

Amidst these projected achievements lies the future prospect of internationalization, reflecting Sanilab's potential to extend its reach far beyond Peru. If its success endures, the organization envisions spearheading change throughout South America and eventually venturing into the global arena.

In this future outlook, Sanilab stands as a potentially influential example of a socially responsible business. The envisaged results validate the alignment of purpose, strategy, and execution, laying the groundwork for a holistic and enduring legacy of positive change that transcends borders and reverberates across communities worldwide.

Chapter X: Conclusions and Recommendations

This chapter will provide the overall insights and work done by the consulting team with Sanilab. Furthermore, it will outline recommendations that can help the company lead to the appropriate decisions.

10.1. Conclusions

Sanilab International SAC, as a social enterprise, developed an ergonomic toilet and worked with communities to improve sanitation and help them have a better life. Two product lines were developed: SaniSystems which produces the dry toilet and Fortyplant which converts the dry toilet waste into biofertilizers. The most significant advantage of the company, in comparison to its competition, is its technologically and innovative approach of converting human waste to fertilizer process.

The consulting team conducted an internal and external analysis of the company and found out that there is a growing market for dry toilets. The lack of sanitation system in a growing number Peruvian communities can be an opportunity for Sanilab's SaniSystem. Furthermore, the internal analysis found that there are issues with the organizational structure of the company due to its lack of financial resources that is causing the identified challenge.

The key problems of Sanilab arose after the consulting team conducted a further investigation into the overall operation. First, the target market of the company is not well established: (1) searching for customers, such as NPOs, who can assist in providing dry toilets for designated communities; (2) selling biofertilizers on the open market; and (3) engaging mining companies to use the dry toilet system in their operations. Since starting the business in 2017, the company has had very few sales. This leads to a secondary marketing challenge as the company has not garnered a good reputation. Second, financial resources are lacking and need to be acquired as the business is cost-intensive – needing big non-

governmental organizations to continue helping low-income communities that need proper sanitation systems.

The consulting team carefully gathered quantitative and qualitative data from relevant sources. Although Sanilab was created in 2017, it is still in its infancy in its overall performance as a social enterprise. A literature review presented three important points on the challenges of creating a non-profit organization – which Sanilab is experiencing. These are focusing on what resources are needed; the decision on whether to go for a non-governmental organization or a social enterprise; and lastly, the consideration of how the business impacts social and environmental issues.

Using qualitative and quantitative analysis, the key challenges were studied in greater detail. Interviews conducted with the CEO Raúl Muñoz highlighted three challenges that the company is facing based on the study adapted by the consulting team. First, Sanilab financial challenges as currently there are no investors, and the company is continually looking for funding. Second, its organizational structure has multiple unfilled vacancies and needs additional staff to handle the workload. Third, the lack of sales and market penetration highlights the marketing issue. Furthermore, the interview with Pachacamac community representative, Norma Alberca, revealed that the dry toilet system is not performing as the communities does not use it as intended. It was also discovered that the human waste plant is not properly working and therefore the dry toilet is not being used as intended.

Several other interviews conducted by the consulting team provided additional understanding. Alvaro Rodriguez, a mining expert, gave insights on whether marketing to mining companies is a feasible option for pursuing sales. In a survey conducted by a Sanilab representative in Nueva Shita, the second community helped by the organization, brought out numerous challenges in terms of support and the proper use of the dry toilet and its implementation. In an interview with the start-up company Ecobuildtec, that produces

housing for mining companies that incorporates toilets into their product gave an interesting insight in the challenges of marketing to mining companies because of their industry-specific requirements.

A root cause analysis was conducted and identified seven causes leading to the problems of Sanilab. These causes are (1) market entry; (2) management; (3) environment; (4) lack of direction; (5) lack of education and awareness; (6) lack of the right marketing strategy; and (7) pricing. The market entry is one significant area to point out as it is interrelated to having financial issues. In addition, management is the second cause of lack of financial resources. As the company is dependent mostly upon volunteers, it lacks a consistent workforce. Furthermore, the present business environment also causes challenges as the Peruvian market is competitive and Sanilab is struggling to stand out. There is a lack of direction as to which approach to take: selling its products to NPOs or targeting the mining companies. Also, the owner lacks business knowledge which adds to the challenge in determining which direction to take. Its lack of the right marketing strategy in having trouble reaching the market, relevant marketing tools like product pricing on the company website, and social media accounts causes the company to be in a worse situation.

Given that crucial causes have been identified, various alternative approaches were developed. The partnership of Sanilab with other non-profit organizations is feasible and would focus solely on the social aspect of the business. Since the inception of the company, its main goal has been to help low-income communities and provide them with a good sanitation system. Therefore, leveraging the shared missions and resources of available non-profit organization have in Peru would be viable option. Focusing on the commercial aspects of the business has also been taken into consideration. However, Sanilab would have to explore more markets other than mining companies since they already have established sanitation system. Furthermore, partnering with other dry toilet producers could incorporate

other technological approaches. For example, having a strong alliance and good relationship with the proposed Container-based sanitation with other dry toilet producers would form collaborative approach that can mitigate Sanilab market related challenges. Although this will be a massive shift of company approach outside its mission, it can be an essential player in innovation and providing sustainable sanitation solutions.

A proposed solution was laid out for Sanilab to eliminate the root causes identified in the study. Although various alternatives are given, some of the alternatives may or may not be implemented due to business challenges, focusing on specific solution is vital to overcome all the challenges. Shifting into a social enterprise to help communities by providing them with a good sanitation system can be the viable solution and to have a better social and environmental impact.

In order to implement the proposed solution, several phases have been identified: (a) strategy refinement, (b) cultivating collaborative partnerships, (c) project implementation and monitoring, and (d) scalable growth and regional impact. These are only effective with the right implementation team, therefore expertise and knowledge of the right people with various backgrounds is crucial.

Results are important to the business and conceptualizing a robust framework on how these outcomes will be monitored can be helpful to the organization. Through KPI monitoring, proposed solutions will be evaluated for their effectiveness. The consulting team established important measurement criteria on this aspect to assess the transformational change of the business. These key performance indicators are (a) environment, (b) social, (c) organizational, and (d) financial. Looking forward to its future, using KPIs will be its indicators of commitment to its social impact to see the effectiveness of its initiatives.

10.2. Recommendations

First, it is recommended that Sanilab should focus on its social aspect of the technological innovation of dry toilets and its biofertilizer. Partnership and collaboration with other non-profit organizations will help Sanilab to further continue its initiatives, setting aside the business aspect and concentrating on making an impact to low-income communities. Furthermore, re-evaluation of its strategy, such as distribution methods and pricing, is also needed to create a more economically accessible product. Since they will focus on social enterprise, giving a lower price to other non-profit organizations with whom they collaborate will add ease to its distribution of dry toilets. Moreover, contacting more non-profit organization present in Peru and internationally will also enable Sanilab to have the funding they need. It is not going to be easy due to organizational and financial constraints but getting the right people with a business background who have the knowledge will support its initiatives.

Overall, transitioning towards socially focused projects may present a feasible approach to reach Sanilab's initial goals. This possibility offers significant accomplishment, particularly in relation to the key performance indicators outlined in the previous chapter. The impact of changing its trajectory will be of greatest importance to the communities, as well as other non-profit organizations, while simultaneously ensuring the provision of a sustainable sanitation system.

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Appendix A: Organizational Structure of Sanilab International SAC

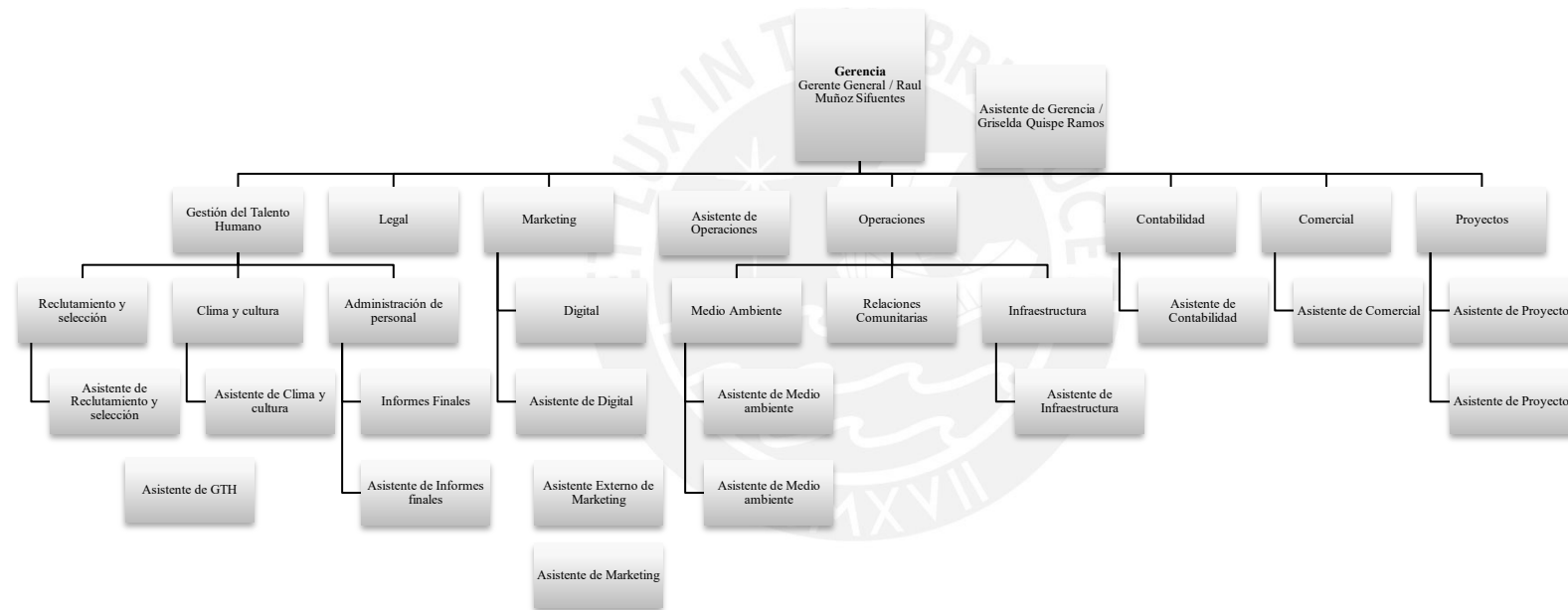


Figure 5. Taken from Sanilab International SAC, Internal Database

Appendix B: Sanilab Flyers



*“Empowering
Communities
Through Sustainable
Sanitation Solutions”*

ABOUT US :



OUR STORY

Sanilab, founded by Raúl Muñoz, emerged from his engineering background and a transformative trip to Africa in 2015. Upon returning to Peru, he developed Sanisystem, an innovative dry toilet system that incorporates a waste-to-fertilizer system, embracing a full-circle approach.



OUR VISION

Our vision lies in creating innovative, cost-effective, and sustainable technologies that empower communities, preserve the environment, and significantly improve the quality of life, particularly in regions facing water scarcity and sanitation challenges.



OUR MISSION

Our mission is to revolutionize sanitation by developing and implementing cutting-edge, affordable solutions. We collaborate with communities to address sanitation challenges, promote environmental sustainability, and enhance quality of life.

OUR PRODUCTS



We provide two key products: SaniSystem, offering eco-friendly dry toilets, and Fortyplant, producing liquid biofertilizers from dry toilet waste.



We are a social startup that seeks partners to sponsor communities in need of affordable eco-friendly dry toilets in Peru.



Join us in our mission for improved sanitation and environmental sustainability in Peru.

WHY CHOOSE US?

We prioritize eco-conscious innovation with our dry toilets, aiming to reduce water usage and minimize waste for a greener world. Our unique SaniSystem streamlines the adoption of sustainable sanitation solutions, ensuring a better future for communities in Peru.

CONTACT US

+51-981-049-956



<http://www.sanilabperu.com/>



gerencia@sanilabperu.com



Lima, Perú
C: 51-981-049-956

Appendix C: Audio Transcriptions of Interview Conducted in Nueva Shita

Transcripción de los audios

El día Martes 09 de Febrero de 2021, Carlos se dirigió a la municipalidad de Salas de la comunidad, previa coordinación con el alcalde. Para mencionarle que era necesario algún contacto de la comunidad Nueva Shilta Alta; no obstante, no proporcionó ninguno. Luego, lo derivó al Área de Gerencia Municipal, quien le brindó los contactos con una foto de los representantes de la comunidad de Nueva Shilta. Asimismo, se hizo énfasis en la importancia del proyecto de sanidad y lo mucho que ello iba aportar a la comunidad, resaltando que era muy necesario su apoyo y participación.

Saliendo de la municipalidad de Salas, se comunicó con el teniente gobernador de Nueva Shilta, GianCarlos Carlos, quien se encontraba en la comunidad. Carlos se dirigió al lugar para conocer y realizar las coordinaciones correspondientes.

→ La comunidad está 30 minutos a pie y 10 minutos en moto (desde Salas hasta la comunidad)

De esta manera, explicó que se iban a aplicar unas fichas para observar cómo estaba el estado actual de los baños de Sanilab, si estaban siendo utilizados o presentaban problemas; además, aspectos relaciones al COVID-19 y la higiene. Siguiendo de ello, se realizó una muestra pequeña de 4 personas, en donde los resultados fueron similares a los resultados oficiales del día sábado. Finalmente, se tomaron fotos y recalcó que era necesario la presencia de más personas para aplicar las fichas, así pueda contactar a más personas y realizar la aplicación.

Día sábado 13:

Salió de Chiclayo a las 8:30 am y llegó a las 10am a la comunidad. Se presentó hacia las autoridades que lo recibieron y les aplicó la Hoja 4 del excel Onedrive, a partir de ello preguntó si han tenido apoyo de parte de las autoridades acerca del proyecto de saneamiento, afirmando que no han tenido apoyo. Además, se les preguntó si saben realizar el mantenimiento a los baños, a lo cual respondieron que no, resaltando que la utilización actual es incorrecta, puesto que es empleado como un pozo ciego.

Respecto a la posición socioeconómica, mencionan que ellos trabajan por jornadas, muchos salen de Nueva Shilta y se dirigen a Olmos, en donde reciben un aprox de 273 soles semanales. No todos de la comunidad salen a trabajar. El número de personas beneficiadas son 320, el número de baños existentes son 70 baños (13 para los colegios, 57 distribuidos para la comunidad).

En el caso de la leña, mencionan que no lo utilizan; en cambio, van al campo y quemar sus residuos con fósforos. Respecto a la venta de algarrobo en la comunidad, observó que actualmente no existe la venta, dado que está fiscalizada.

Aplicación de fichas:

Luego de la aplicación, las autoridades ayudaron a iniciar la encuesta/fichas a la comunidad. La muestra total fue de 34 personas, entre hombres y mujeres, en donde se halló que la mayoría no tiene una idea de lo que es el saneamiento.

En las fotos subidas en el drive, se observa que los baños no son utilizados con el fin inicial, pues la planta está inoperativa. Los usuarios han optado por cavar un par de metros hacia abajo (como un pozo ciego) y colocar allí sus residuos; mientras que, otros hacen sus necesidades al aire libre. Además, a pesar de que haya agua entubada sin clorar para su consumo, no tienen sistema desagüe.

Por otro lado, se evidencia que la comunidad ha sufrido enfermedades diarreicas, por lo cual resulta necesario que sepan sobre el mantenimiento de los baños, pues estos suelen estar malogrados, sin uso o en estado regular. Resaltando de nuevo que, se usa los baños de Sanilab como pozo ciego, y no como su función principal.

Alrededor de las 4pm, se culminó de aplicar las fichas a las 34 personas, donde se realizó el análisis del estado de los baños y las hojas 2 y 3 del Excel. Para concluir, se habló con las autoridades para que pongan de su parte en el proyecto con el fin de que siga adelante, informándoles que se realizarán asistencia vía llamadas telefónicas para que así ellos indiquen los problemas que hay en la comunidad.

Respecto al COVID-19, la comunidad indica que no ha tenido casos; no obstante, una señora afirma haber tenido esta enfermedad, pero se le nota distraída y al ser mayor de edad, Carlos menciona que no está seguro si era cierto. Por otro lado, el colegio continúa inoperativo y las medidas de seguridad que han implementado al inicio de la pandemia es colocar una “tranca” para que nadie ingrese. Del mismo modo, las personas comentan sobre la utilización de mascarilla y el lavarse las manos constantemente; sin embargo, Carlos afirma que cuando hizo la aplicación de las pruebas ellos estaban sin mascarilla.

Appendix D: List of Possible Organizations for Partnership

Name and Description	Origin	Email address Contacted: Yes/No	Response
Malteser International	Projects in Peru	jelena.kaifenheim(at)malteser-international.org	
Care	Projects in Peru	postmaster@care.org.pe.	
GIZ Peru	Projects in Peru	giz-peru@giz.de	
Lands Aid	So far Latin America not Peru	carola.gerhardinger@landsaid.org	
AWO	Central America so far	mail-ca@awointernational.de	
SODI!	Central America so far	info@sodi.de	
HelpAge Deutschland	Projects in Peru	info@helpage.de	
European Union	Latin America, not Peru	https://european-union.europa.eu/contact-eu/write-us_en	
Water Aid	Latin America, not Peru	https://www.wateraid.org/us/contact-us0	
Helvetas	Projects in Peru	peru@helvetas.org	
CAFOD	Projects in Peru	cafod@cafod.org.uk	
Solidarites International	Latin America, not Peru	https://www.solidarites.org/en/contact/	
SOS children Village	Projects in Peru	https://www.sos-childrensvillages.org/general-questions)	
Caritas	Projects in Peru	postmaster@caritas.org.pe	
ADRA	Projects in Peru	adra@adra.org.pe	
Tearfund	Latin America, not Peru	info@tearfund.org	

WeEffect	Latin America, not Peru	americalatina@weeffect.org
Toilets for People	Jamaica, with projects in Peru	info@toiletsforpeople.com
StartSomeGood	Crowdfunding - US	https://startsomegood.com/crowdfunding
PNUD (Programa de las Naciones Unidas para el Desarrollo)	Projects in Peru	fo.per@undp.org
Avina Foundation	Projects in Peru	info.web@avina.net
Abaco Cooperative	Cooperative in Peru	abaco@abaco.com.pe
Wiese Foundation	Projects in Peru	info@fundacionwiese.org
Latin America and Caribbean Investment Facility	Projects in Peru	INTPA-LAIF- MANAGEMENT@ec.europa.eu
Care Peru	Projects in Peru	amigos@care.org.pe
Swiss Cooperation in Peru	Projects in Peru	lima.sdc@eda.admin.ch

Expenses	13	14	15	16	17	18	19	20	21	22	23	24
Strategy Refinement												
Business Plan Development												
Market research and analysis												
Business plan writing and development												
Re-Branding												
Marketing												
Marketing Expert												
Community Manager's trainee												
Content Manager's trainee												
Digital Marketing campaign												
Traditional marketing materials												
Financial Analysis and Resource Planning												
Cultivating Collaborative Partnerships												
Networking												
Stakeholder Engagement												
Project Implementation and Monitoring	S/ 5,000.00	S/ -	S/ 1,000.00	S/ 1,000.00	S/ 1,000.00	S/ 1,000.00	S/ 2,500.00	S/ 1,500.00	S/ 1,500.00	S/ 1,500.00	S/ 1,500.00	S/ 1,500.00
Pricing consultancy	S/ 5,000.00											
Monitoring			S/ 1,000.00	S/ 1,000.00	S/ 1,000.00	S/ 1,000.00	S/ 1,000.00					
Training							S/ 1,500.00	S/ 1,500.00	S/ 1,500.00	S/ 1,500.00	S/ 1,500.00	S/ 1,500.00
Contingency fund (10%)	S/ 1,000.00	S/ -	S/ 200.00	S/ 200.00	S/ 200.00	S/ 200.00	S/ 500.00	S/ 300.00	S/ 300.00	S/ 300.00	S/ 300.00	S/ 300.00
TOTAL S/	S/ 6,000.00	S/ -	S/ 1,200.00	S/ 1,200.00	S/ 1,200.00	S/ 1,200.00	S/ 3,000.00	S/ 1,800.00	S/ 1,800.00	S/ 1,800.00	S/ 1,800.00	S/ 1,800.00