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# A big step for a small company: How can Fumajet scale its innovation globally?

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#### Abstract

**Objective**: This paper is a teaching case designed for graduate and undergraduate courses on subjects involving international business, international marketing, or international entrepreneurship. It describes how a small entrepreneurial company – Fumajet – could recognize and exploit an international opportunity, and the dilemmas its founders confronted regarding the choice of internationalization strategy and entry mode. **Dilemma or problem**: Faced with several potential alternatives to structure Fumajet's international activities, the entrepreneurs had to analyze and select an international entry mode strategy to present to the recently created board of directors, following a significant infusion of capital into the company. **Relevance/Originality**: Grounded in real-life experiences, this case study draws from primary and secondary sources gathered over two years, presenting students with a real, practical, and relevant dilemma. By the end of this case study, students should be able to apply these learnings to real-world scenarios. The unique challenges portrayed make this case study particularly engaging and thought-provoking for students.

**Keywords:** International Opportunity. Foreign Entry Mode. Emerging Market. International Strategy. International Entrepreneurship.

Um grande passo para uma pequena empresa: Como a Fumajet pode escalar sua inovação globalmente?

#### Resumo

**Objetivo**: Trata-se de um caso de ensino, projetado para cursos de pós-graduação e graduação em disciplinas de negócios internacionais, marketing internacional ou empreendedorismo internacional. Descreve o processo de identificação e exploração de oportunidade internacional por uma pequena empresa empreendedora – Fumajet – e os dilemas de decisão de seus fundadores em relação à estratégia de internacionalização, e modo de entrada. **Dilema ou problema**: Diante de diversas alternativas potenciais para estruturar suas atividades internacionais, os empreendedores precisam analisar e selecionar uma estratégia de modo de entrada internacional para apresentar ao recém-criado Conselho de Administração após recente entrada de recursos financeiros. **Relevância / originalidade**: Baseado em uma situação real, este estudo de caso utiliza dados coletados de fontes primárias e secundárias ao longo de um período de dois anos. Provê assim aos estudantes uma situação real, relevante e usual para tomada de decisão. Ao final deste estudo de caso, os alunos devem ser capazes de aplicar esses aprendizados a cenários do mundo real. Os desafios únicos retratados tornam este estudo de caso particularmente envolvente e estimulante para os estudantes.

Palavras-chave: Oportunidade Internacional. Modo de entrada estrangeira. Mercado Emergente. Estratégia Internacional. Empreendedorismo Internacional.



#### **INTRODUCTION**

Marcius Costa was driving home on a Monday evening in August 2022 after a long day at the office of Fumajet, a company specialized in exterminating urban vectors and agricultural pests. That afternoon, he and his partner, Marcelo Machado, had met to discuss their upcoming presentation to the board of directors the following month. Their conversation lingered in his mind:

"So, Marcius," Marcelo said, "given the current crisis in the domestic market and the orders pouring in from abroad, we agreed in the last board meeting that Fumajet would focus its commercial efforts internationally. At the next month's meeting we need to show them we have made some tangible progress."

"I agree, Marcelo," Marcius replied. "The problem is that I've been working non-stop, travelling to Angola and back, and I simply haven't had the time to prospect for new clients. Moreover, the unsolicited orders we received and responded to were unsuccessful, and I haven't had the time to follow up to figure out why."

"Seriously? Should we consider hiring someone to help you out?"

"I'm not sure that would be enough... perhaps we should reassess our entire internationalization strategy..."

"What do you mean?"

"Well, none of our prospective clients accepted our commercial proposals, so firstly, we need to ascertain the reasons behind their rejections. But even if they had accepted them, we would still face other challenges. First, we would need additional production capacity to produce and deliver the ordered quantities. Second, we would have to devise an efficient distribution system for our product in each market. Third, and most importantly, we wouldn't be able to provide adequate training and maintenance services in all those markets. We have so much work, and things are moving so fast that we don't have time to plan ahead."

"Wow, I had no idea ... It's a good thing we received an infusion of cash. It looks like we have some serious investing to do," Marcelo remarked.

"Yes," Marcius agreed, "but before that, I think we need to carefully analyze and evaluate our internationalization options, choose the most viable one, and then present it to the board for their approval."

"Definitely. After all, we don't have the money or the people to tackle everything simultaneously."

The two partners concurred that their current business model would not work for expanding overseas; they needed a comprehensive international business strategy to present to the board in less than a month. However, what were their options?

#### COMPANY BACKGROUND: ENTREPRENEURS, INDUSTRY AND HISTORY

#### The entrepreneurs

Fumajet is owned by the entrepreneurs Marcius Costa and Marcelo Machado. Marcelo Machado, with a background in Industrial Design, started his career as a designer in a sector company, swiftly acending to art director. Driven by an entrepreneurial vision, Machado founded two companies, the first in 2005 and the second just a year later, in 2006, acting as director at both for four years. He is currently in charge of financial and administrative operations at Fumajet, demonstrating skills in management and leadership. With his previous experience in entrepreneurship and design, he brings a unique perspective to the company, driving it toward success.

Marcius Costa, the company's main founding partner, spearheads product development, strategic planning, and marketing decisions. His responsibility also lies in innovation, having created the company's flagship product, the Motofog. With a background in design, Costa lived for a time in the United States, where he focused on brand building and graphic design for the audiovisual industry. As a result, he developed a keen eye for innovation and product development, alongside a global mindset and proficiency in English. Consequently, he advocated and became responsible for the company's internationalization. Moreover, he was passionate about people, the company, its products, and growth opportunities.

Nevertheless, despite his devotion to the company and industrious work ethic, Costa grappled with the overwhelming workload. He found himself shouldering extensive supervision duties, compounded by being the sole fluent English speaker as the company experienced rapid growth. While he thrived in discussions concerning product innovation and strategic planning, he harbored reservations about delving into production processes or maintenance services. He sometimes wished he could delegate such matters to someone else: "If we're expected to ramp up production to 500 Motofogs a month, I'm not sure I'm the right man for the job" he stated. "I don't know much about the industry; I see us more as an intelligence and environmental health management company."

#### The industry

High population growth is fueling global food consumption, which in turn is boosting demand for agrochemical products such as pesticides. Additionally, increasing deforestation and urbanization are contributing directly to a decline in cultivable area, which has led farmers worldwide to adopt intensive farming methods to maximize yield and minimize damage from pests and diseases. As a result, the demand for agrochemicals, including pesticides, is expected to increase significantly over the coming years (Persistence Market Research, n.d). The primary markets for this anticipated growth are Asia-Pacific and Latin America, focusing on China, India, and Brazil. (Transparency Market Research, n.d). In 2020, the Global Pesticides Market was worth US\$ 94.22 billion (Maximize Market Research, n.d).

However, using insecticides is a significant problem in urban and rural areas. Despite the broad availability of different types of these chemicals, it is difficult to apply them, especially in remote and inaccessible areas. Meteorological conditions, mist generation, the suitability of various spray nozzles, and target specificity must be considered during the application process. Users need to be careful to apply just the right amount: using too much may damage the environment and be costly, while applying too little may be ineffective in controlling the pests. Fumajet's recent innovation, the Motofog, addresses some of these issues. It is also a low-cost system compared to existing systems on the market.

#### **Company History**

Since its inception in 2009, Fumajet has specialized in providing technological solutions for agribusiness and public health care. Its mission is to preserve human health through the development of innovative and more efficient products and services.

The company has experienced considerable success in product development along its trajectory. Its first and most significant invention, the Motofog, allows the manual application of insecticides against mosquitoes, sand flies, and other vectors in hard-to-reach areas where fumigation vehicles cannot penetrate. These areas includes slums, hilly areas, alleys, vacant lots, scrapyards, canal banks, sandy and irregular terrains, among others. The Motofog stands out for its innovative utilization of a motorcycle engine to power the insecticide spraying mechanism, a design for which Fumajet holds a patent. This design enables the motorcycle to access areas that would be difficult to reach with a larger vehicle, providing greater reach than manual application on foot. Hence, in addition to being more effective, the Motofog boasts financial



and operational advantages such as autonomy, maintenance, and storage, rendering it significantly more cost-effective than installing a similar solution into a larger vehicle. Another notable Fumajet product is a vector and pest control station installed within a container, making it ideal for use in ports, airports, and vessels. However, despite being practical and promising, this product is still undergoing development. Consequently, it is not currently the focus of Fumajet's international strategy.

The financial resources supporting Fumajet's product development came from several government programs, particularly from Financiadora de Estudos e Projetos (Research and Projects Financing), a Brazilian federal agency dedicated to funding innovative projects; Banco Nacional do Desenvolvimento Econômico e Social (Brazilian Development Bank) (BNDES); Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (Brazilian Support Service for Micro and Small Enterprises); and Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro, an agency of the State of Rio de Janeiro that promotes science, technology and innovation.

Recently, Fumajet received an infusion of capital from BNDES' Criatec Fund, which not only injected financial resources but also prompted a change in its management structure. This change involved the establishment of an administrative board comprising investor members from the fund and advisors appointed by Fumajet. The board was tasked with evaluating and approving the company's planning and future actions at its monthly meetings. Fumajet management was thus encouraged to reassess its domestic and international strategies.

Most of the company's domestic customers were local governments. Fumajet typically sold the manual kit to local government agencies, leased the motorcycles, and managed the vector control operation. By law, however, the operator of the equipment had to be directly employed by the local government.

The company had 21 employees, 14 of whom allocated to production, 4 to research and development, and 3 to administration. It held 17 patents in Brazil and abroad. The company had also received several national and international awards over the years in recognition of its innovativeness. As a result of global media exposure concerning the Motofog, Fumajet received unsolicited orders from various countries worldwide.

#### THE INTERNATIONALIZATION OF FUMAJET: A BIG STEP FOR THE SMALL COMPANY

Despite an initial passive approach to exporting, international operations soon accounted for over 30% of the company's revenues. Orders continued to flow in from developing countries, prompting the entrepreneurs to consider international activities as a potential source of income. However, Fumajet struggled to consistently fulfill orders. Quite often, Fumajet lost potential customers, because it was unable to simultaneously serve domestic and foreign customers due to a lack of managerial time or insufficient production capacity. The company also needed additional resources to invest in international expansion. It soon became clear that the company would have to reorganize its internal operations to effectively seize foreign market opportunities. Global expansion was an attractive growth opportunity, but the company lacked a defined business strategy or business model; consequently, it had to deal with each international experience differently, depending on the specificities of the customer.

The company's foreign operations mirrored its domestic business model. For example, in Angola, Fumajet partnered with a local company already doing business with the government, with Fumajet providing technology rather than directly selling kits. Under this arrangement, 25% of the total project revenue went to Fumajet and 75% to the partner. Although the project was successful in its first year of operation, Marcius Costa explained that the situation had changed afterwards:

Upon arriving in a country to start an operation, one must deal with a local company with a multimillion-dollar contract. However, the company may have to adjust its position after a year and a half because of a change in government. And then a hellish battle starts. I need to know a lot about a country to get into a battle like that. I can only win if I have the right local partner. The battle is huge and involves multimillion-dollar contracts.

Given the large number of business inquiries from potential national and international customers, Fumajet adopted an online system to manage the flow of demands and internally assigned tasks. This platform facilitated the recording of all contacts and allowed for separate monitoring of their progress. Annually, the company received over 180 requests from abroad, mostly from developing and low-income countries. However, since each case differed, Fumajet tailored its offerings to each customer. Recognizing the need for standardized contracts and operations, Costa, encouraged by the board, decided it was time to develop a strategy that could be replicated across various foreign countries, thus enabling the company to increase its scope of international operations.

#### STRATEGIC ALTERNATIVES

After several contacts with experts to explore potential alternatives, Costa arrived at three different entry mode alternatives: (i) establishing partnerships with foreign companies in specific markets (referred to as "foreign partnerships"); (ii) using foreign distributors (referred to as "foreign distributors"); or (iii) licensing the technology (referred to as "technology licensing"). While there were different implementation approaches for each entry mode option, several issues needed assessment before deciding.

The first alternative (foreign partnerships) entailed finding long-term partners to introduce Fumajet's products and services into foreign markets. An ideal local partner would have relevant industry experience, an established network of relationships, and provide services similar to those offered by local governments If Fumajet pursued this route, ensuring partner commitment emerged as a significant concern. Costa believed that a partner's investment in the venture meant committment to its success. Consequently, granting exclusive commercial rights would depend on the partner's level of investment. The entrepreneurs envisioned the ideal partnership resembling a franchise agreement. Fumajet would supply Motofogs and provide all the training needed for installation on motorcycles. There should be a minimum requirement for a partner's investment, but the founders uncertain about how to quantify it. One possibility would be to assess the size of the potential market and require a minimum investment of 5% of the estimated market potential. Costa elaborated:

> The initial investment for our project would be similar to what a typical franchise agreement requires. I would send a technician to oversee installation and basic training, granting the partner, for example, six months of exclusivity to prospect the entire market. There would be a minimum requirement for investment in the business, but how much? This amount must be feasible and align with partnering with a small Brazilian company.

Another possibility within the foreign partnership alternative was to have two different contracts. The first contract would entail the foreign partner importing the equipment, which Fumajet would install and provide training for the operational team. Once the project were underway, the two partners would sign a second contract entailing ongoing maintenance and support, including GPS operation management services, continued training, and technical monitoring of operations. Under this arrangement, Fumajet would derive more revenue from the first contract and receive regular monthly income throughout the project's life.

In the second alternative, selecting a foreign distributor, required deciding whether the distributor would sell or lease the product. If the foreign distributor purchased the equipment from Fumajet for resale, Costa believed the equipment price and distributor margin would need to be sufficiently high to accommodate the provision of technical assistance. Thus, a better option would involve the local distributor leasing the equipment to the government instead of selling it, thereby potentially generating higher sales volume.

Whether using local partners or distributors, Fumajet would have to provide after-sales services in foreign markets. Given the Motofog's requirement for preventive and ongoing maintenance, maintaining a reasonable inventory of spare parts locally would be essential. Training a network of authorized representatives appeared to be a good solution, but determining how to provide effective training would take time and effort. Marcius Costa was the only person in the company proficient in English and possessing the required technical capability. Thus, the cost of sending the company's CEO to train operational staff abroad made this solution untenable.

> "Physically, it is impossible for me to be everywhere simultaneously. There is also a language problem, since people in many countries do not speak English. A potential solution involve producing instruction manuals and videos in several languages. However, considering that both the installation and maintenance of the Motofog vary according to the motorcycle model, the number of required manuals and videos due to the various combinations of languages and motorcycle models would be huge ... "

Prior to making any final decisions and testing potential contract terms, Costa dispatched a few proposals in response to sales inquiries from Latin American companies. The proposals included: (i) the sale of the product itself; (ii) provision of complementary GPS control services; (iii) training costs for the sales team and equipment installation on the motorcycles; (iv) maintenance costs; and (v) a minimum purchase requirement of five units. Unfortunately, none of the proposals were accepted. Costa concluded that requiring a minimum purchase of five units, each priced at approximately \$5,000, might have deterred potential customers. However, selling only one unit would entail a high risk of piracy, particularly in developing countries with insufficient intellectual property rights protection. A potential solution would involve the partner covering travel expenses for Fumajet's training team. Acquiring one Motofog and covering training costs would require an initial investment of approximately \$10,000. In any case, Costa believed that the primary objective for the local partner or distributor would be to secure the first customer in a country, and then other projects would follow.

Another issue to address was gaining a deeper knowledge of customer characteristics. Costa was still trying to determine whether the end user would be a distributor of the equipment, a service provider, or an individual purchasing the equipment for personal use, such as a farmer or a city government. Due to cost and time constraints, Costa realized that conducting formal market research was impractical. Nevertheless, the company had received e-mails from over 300 prospects interested in importing the equipment. Examining this data could provide valuable insights into the final customer's characteristics. Also, a visit to Angola provided some insights into other issues. Costa had made several commercial contacts there, including a Brazilian construction company grappling with malaria issues among its local workforce. Hence, the company was anxious to acquire the Motofog. Therefore, Costa recognized an opportunity to approach other Brazilian construction companies operating in developing countries, as well as other Brazilian multinationals operating in different sectors which, for one reason or another, might need this type of equipment.

Costa considered a third alternative: Fumajet to act solely as a technology provider (technology licensing).

"The investment required to service a large order might be prohibitive for a small company like Fumajet. Manufacturing the equipment might not make sense; licening the technology appears more practical. In this case, Fumajet would sign a legal contract with another company, granting it the right to use Fumajet's technology to offer pest control services."

Licensing fees can vary substantially across industries, ranging from 2-3% to 7-10% of sales (Tharp, 2012), depending on the uniqueness of the product and brand name. In the case of Fumajet, Costa opted for licensing fees on the low end of this spectrum.

This alternative capitalized on the company's competitive advantages, particularly its ability to develop pest control solutions. The idea was to license the technology to a significant global player, establishing a partnership in which the licensee would provide industrial and international distribution capabilities. Fumajet would provide the technology and related services, including training. To make this a viable alternative, Fumajet would have to format the product for licensing, develop manuals and technical drawings, and translate the materials. Furthermore, it would be necessary to formalize the services and products offered, and to delineate the costs and responsibilities for both parties. Finally, management would have to compile a list of potential licensees to contact. Fumajet would also have to define the terms of the licensing agreement and how to control the licensee's output. The risk of piracy and losing the technology were genuine concerns in this option.

At this stage, the technology was only patented in Brazil, requiring the company to obtain patents in other countries to protect it. The costs of patents varied widely, depending on product type, country, and attorney fees. Based on Internet research, Costa estimated that government fees for an initial patent application in target countries could range from \$500 to \$2,000. However, in many developing markets, having a patent only served to intimidate potential infringers. Fumajet would also have to consider branding, including the extent to which Fumajet should use its brand in different countries. The answer would depend on the adopted strategy. Also, any investment in branding would be too limited to have an impact in terms of building a solid international reputation.

#### **FUTURE PERSPECTIVES** WHAT IS THE BEST APPROACH FOR **INTERNATIONALIZATION?**

Marcius Costa and Marcelo Machado needed an international business strategy to present to the board in less than a month. A few months earlier, the company had received substantial funds from an institutional investor. Costa intended to use some of these resources for the company's international expansion. However, depending on the chosen internationalization strategy, he recognized the need to allocate funds for hiring managerial staff, expanding production facilities, and developing manuals. Thus, before committing to any investments, Costa would have to thoroughly evaluate the pros and cons of each alternative, making a preliminary decision on on the best approach for international expansion. Once he had arrived at a decision, he would have to present a plan to representatives of the institutional investor, now members of the company's board of directors.

How should Fumajet approach international markets: by forming full partnerships with foreign companies in each specific market, using foreign distributors, or licensing the technology? Each option entailed distinct advantages and challenges, necessitating careful consideration and analysis to determine the most suitable path for Fumajet's international growth.

#### **Case Study**

This case study provides the teaching notes separately.

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The authors declare that there is no conflict of interest.

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