Filipe Marques Novais

Customer analysis in a provider of electronic services in the field of freight transport.

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Dissertação de Mestrado
Mestrado em Economia

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I

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AGRADECIMENTOS

The end of a stage, the end of a journey and the beginning of another adventure.

I look back with a sense of accomplishment and the feeling that I have succeeded in constantly pushing my limits. I never thought I would ever write these words, or even have the ability to do so.

If this page is to thank those who have helped me grow as a person, then I would like to thank my parents for instilling in me the values and principles that guide me day after day, my family for their unwavering support during these two years in Portugal, my friends for the moments of escape, and all the teachers I have met during my school career.

I would like to thank the University of Minho for allowing me to live this university experience in the country of origin of my parents, which is also dear to my heart. The encounters made here will remain forever engraved in me.

Finally, a special thought to you grandmother. Thank you for everything.

DECLARAÇÃO DE INTEGRIDADE

Declaro ter atuado com integridade na elaboração do presente trabalho académico e confirmo que não recorri à prática de plágio nem a qualquer forma de utilização indevida ou falsificação de informações ou resultados em nenhuma das etapas conducente à sua elaboração

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SUMMARY

This article aims to present the internship program developed at Ontruck, in order to obtain the Master's degree in Economics from the University of Minho. Ontruck is a start-up that develops a digital platform to connect transport service providers with customers. Among transport institutions, Ontruck is a freight forwarder, whose main function is to organize the transportation of goods from one place to another for their clients. In the case of Ontruck, the company generates profits through the difference between the price at which it sells the shipment to its client and the price at which the carriers accept to make the shipment. Also, the transportation of goods plays a crucial role in the economy. It allows companies to supply their production or assembly sites with raw materials and production tools, but also to reach their final customers. Today, the importance of the transport sector is constantly increasing due to the ever-shorter delivery times caused by new consumption patterns and the environmental challenges of our century.

Based on the structure of the company and the role that transport companies play, considering the trainee's higher education, it is justified to choose this type of establishment for the first contact with the labor market. The internship program focused on the commercial departments in order to acquaint the intern with the products and services offered by the company and the transactions that take place there. In this project, we described the areas studied, the main activities carried out and the suggestions made to the relevant departments, where necessary.

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[1] All tables and figures were made by the author, with the exception of Figure 3.

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INTRODUCTORY NOTE

This document is part of the master's degree in Economics of the University of Minho and has the purpose of presenting the curricular internship carried out in the company Ontruck, in order to obtain the master's degree of the mentioned course.

The curricular internship is understood as the exercise of duly qualified practices within the framework of a professional activity and its function is to confront the intern with real work situations, thus promoting the practical component of the student's learning.

It is based on this advantage that the choice of an internship over a thesis or project is justified. More and more, professional experience is valued by companies and higher education focuses more on theoretical than practical elements. An internship therefore allows contact with the reality of the company and the acquisition of knowledge that would not otherwise be possible.

The course aims to achieve the following objectives:

- Connecting to the job market in an entrepreneurial environment

- Analyze the functioning of a startup in the transportation sector, the respective products, services and operations it performs.

- Valuing and integrating knowledge acquired throughout an academic career

- Acquire specific knowledge of the freight transport sector

- Develop the ability to solve real problems

- Foster interpersonal relationships and the ability to work in a group

Methodology of this work

In order to obtain the master's degree in Economics, the student, as part of a curricular internship, will perform the following activities:

1. Integration into the host institution.

2. Identification of potential problems / diagnosis of needs.

3. Interviews/conversations with members of the institution.

4. Tasks to be performed in the institution.

5. Documentary research.

6. Review of the literature.

7. Writing of the internship report.

1 - INTRODUCTION

"A way of working that hasn't changed in 100 years": this is how Inigo Juantegui, CEO (Chief Executive Officer) and Co-Founder of Ontruck, describes the road freight industry in an interview with Genbeta magazine, shortly after the launch of his startup, Ontruck, in December 2016.

New technologies have changed the way we transmit information, interact in society and consume. Mr. Juantegui, aware of the contribution of new information and communication technologies (ICT), decided to found Ontruck with the aim of optimizing a sector that has changed very little in recent years, the road transport of goods. For his company to grow and evolve, the acquisition of new customers is essential.

Before we get into the motivations of the subject of this internship report, let's see how I came to know Ontruck and what my motivations were for embarking on this professional adventure.

1.1 - Finding an internship

As a second-year student of the master's in economics, I consider my personal and professional experiences as a series of adventures that allow me to better know myself. My internship report is an observational and reflective study of the environment in which I was immersed for 6 months: the world of road transport of palletized goods and the start-up.

It is for me to propose a reflection on the whole of my experience, and not a simple description of the missions carried out during the training.

In my search for an internship, I mainly sent unsolicited applications indicating my desire to study business development, data analysis, and the internal organization of a company in an international, dynamic, and stimulating context that would allow me to have an enriching professional experience for my future. I decided to focus my applications on companies better known as "startups", as I considered that this would be the type of company where I could be put to the test, far from the stereotypical "coffee machine" type of internships.

I wanted this internship to be paid in order to be able to pay the school fees but also to acquire a certain independence, hence the choice to apply in companies based in France.

Moreover, as it was the case for my master's research, I was looking for a company whose activity allowed me to work in a foreign language in addition to my mother tongues, Portuguese and French.

When I applied to Ontruck, I saw an organization full of opportunities in the transportation sector that combines technology and ecology to optimize the transportation of palletized goods on the road.

After receiving my application, I was invited to 3 meetings, at the end of July, with respectively, Nicolas Lubet (former General Manager France), Parfait Bazebi (former Head of Operations France and current General Manager France) and Ronan Perrodou (Sales Manager). Interested in my profile, he wanted to have more information on my motivations and on what I expected from this internship in order to come back to me with a proposal. After a final interview with Ronan, I was offered to join the sales team and actively participate in account management, lead generation, market research, collection and acquisition of new customers around an international team based in Spain and the Netherlands where Spanish and English are the languages spoken internally.

I was immediately interested in this internship offer because it is an international structure in full development (fund raising of 17 million euros in June 2020), which offers the possibility of studying the business world in a very dynamic context and which met my search criteria.

With Ronan and the help of the University of Minho Career Office, we agreed that my internship would last 6 months, 4 months of curricular internship plus 2 months of extracurricular internship, from 06/09/2021 to 07/03/2022.

1.2 - General mission of the trainee

As in any company, especially in a start-up, the workload is very heavy, and the assignments can be very versatile. I felt that I gained more responsibility and independence during my time at Ontruck. The diversity of my assignments has increased and with it my skills and knowledge about business, entrepreneurship and the transportation industry. While my first tasks within the company were related to the position I held, I was able to gain a global understanding of what it means to manage a company, the personnel, but also other sectors of the company by collaborating with the financial department in the framework of my collection activity, but also with the "Growth" department with which we collaborate in order to identify segments on which we could base the activity of acquiring new customers.

A) - Boarding

On my first day at the company, I was provided with a set of digital resources stored in the company's google drive to help me better understand the sales profession and the specifics of transportation. These were mainly documents where I was able to learn more about Ontruck (product and service), how freight transportation works, and how to effectively prospect, among other things.

Next, I was invited to participate in telephone prospecting sessions with the other salespeople in the company to practice what I had learned in theory. I was able to identify their strategies for getting relevant information from their prospects.

Finally, onboarding days were organized with all newcomers, France and Spain combined. These days consisted in attending demonstration meetings (via online conferences) of the work carried out by the different departments of the company: Marketing, Product, Fleet, HR, Procurement, Sales, IT, Finance, etc. The goal of the day is to better understand how Ontruck works, to foster team spirit within the company and of course, most importantly, to integrate newcomers.

B) Accounting

During the first month of my internship, in order to initiate me to customer contact, I was given the task of collection. I was then in collaboration with the financial department of the company, based in Spain, in order to regularize the situation of the customers who had not yet paid their transport. Later on, this activity was taken over by Ronan in order to allow all the sales managers to concentrate on the prospecting activity.

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C) Business Development

My involvement in business development is linked to the mission for which I was recruited, namely sales executive. The missions of a sales executive are based on the implementation of a strategy to find new prospects and business leads and to convert them into paying users or customers.

D) Marketing

We did not have a marketing department based in France. Ontruck's marketing department is centralized at the headquarters in Madrid, Spain. Therefore, we had bi-weekly meetings with the executive sales team to get feedback on the week's customer acquisition and results to discuss potential targets. In addition, we occasionally collaborate to correct any translation errors regarding the addition of new content on the company's website or social networks to have content in French.

1.3 - Motivation for the subject of this internship report

This adventure within the transport sector has been very enriching in terms of experience, personal development and knowledge in terms of business development. I was able to work with many decisions support tools, especially in terms of customer segmentation, and I learned a lot from my internship tutor, whom I would like to thank very much for his human support throughout my adventure at Ontruck.

However, as part of its development in France, to which I was able to contribute in part, Ontruck is facing a problem of business volume and profitability of its product. This lack of profitability led to the departure of many colleagues during my first 3 months in the company. The company is therefore faced with an important need to acquire new customers and make its product more profitable. Facing this problem, the company decided to specialize its activity in the service in which it has a "real" added value: the transport of palletized goods in just-in-time, the transport service called "direct". This service simply consists of loading and delivering the goods from point A to point B without changing the means of transport. Ontruck also decided to restrict its commercial activity to the Paris region and to stop all acquisitions in other regions. However, during this internship, I was able to experience a certain difficulty in acquiring new customers, as the acquisition process takes time. Because of these difficulties, it is even more important to identify which types of customers allow Ontruck to have a higher profitability in order to base the prospecting campaigns towards new customers that are as profitable as possible.

With the intention of obtaining a master's degree in Economics at the University of Minho, considering the contributions of this internship, the teaching I have received throughout my academic career and the challenges I have encountered during my experience at Ontruck, this internship report will aim to answer the following question

What types of users are most profitable for Ontruck?

However, I think it is important to contextualize the company (its geographical area of activity and its product) and to analyze the activity of the sales team before introducing the investigation questions.

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A) Ontruck and its users

As explained at the beginning of this introduction, Ontruck was born out of the desire to optimize the freight transport sector through technology.

Ontruck is a freight forwarder, which means that it organizes the transportation of goods on behalf of its customers. Not having its own trucks, the company organizes its transportation activity through its web and mobile application (Saas) which acts as a marketplace[2] between carriers and shippers. As a result, Ontruck has to interact with two types of customers or users because even though Ontruck provides a service for both parties, only the shippers are the real customers because they buy the transportation service.

On the one hand, we have shippers who use the application because it provides them with more flexibility, traceability, transparency and a responsible service, particularly in terms of reducing the resources allocated to transport (reduction of empty miles). They are mainly companies from the secondary and tertiary sectors, i.e. the industrial and commercial sectors. Specifically, shippers can be freight forwarders, logistics operators, distributors, retailers or manufacturers. For them, Ontruck takes care of the transport and route selection in order to get their goods to the final recipient in a timely and quality-conscious manner. They are the company's source of revenue.

On the other hand, we have carriers who use the application to reduce their periods of inactivity, to have a complementary income, to optimize the space of their trucks and to have shorter payment terms. They are all independent carriers working on their own account with their own vehicle. Ontruck is responsible for assigning the runs and connecting with the customers (shippers). Shippers are the cost function of a transportation operation.

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[2] A place where supply and demand meet

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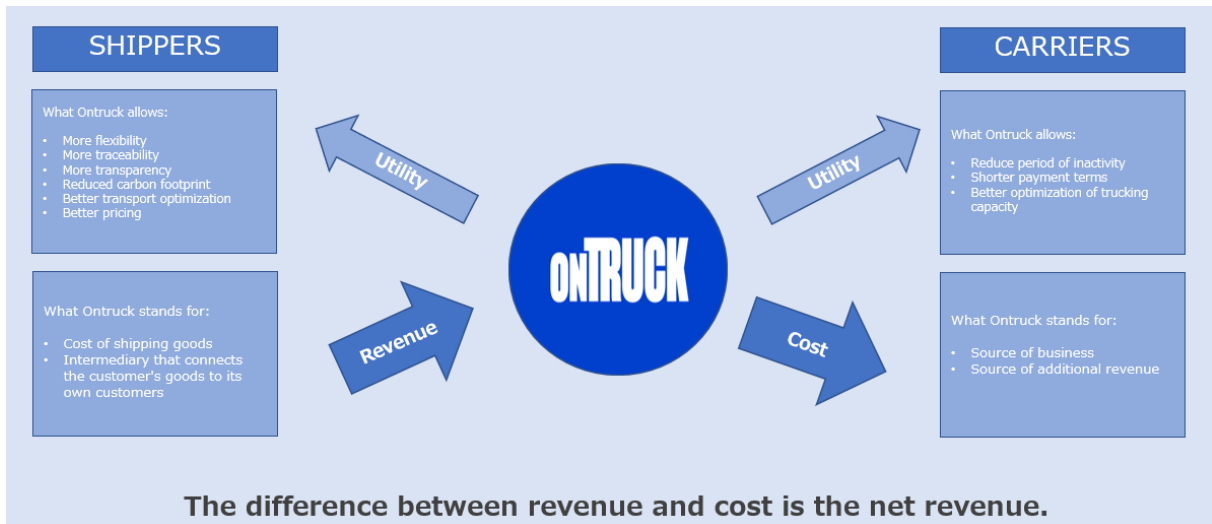
Figure 1 : Relation between Ontruck and Users (Shippers & Carriers)

The goal is to allow the customer to obtain transportation for the shipment of their goods at any time (up to one hour before loading), regardless of the volume of the shipment, at a lower cost and in a more responsible manner. Ontruck makes its margin from the difference between the price paid by the shippers and the cost of transportation related to the carriers. In this study, we want to distinguish between these two types of users and analyze their characteristics in order to make recommendations regarding the most profitable users for the company. By "profitable" we mean the capacity of each trip (transport) to generate a greater profit.

B) Geographical area

   Today, Ontruck's activity in France is based on the Ile-de-France and Oise regions. This region includes 9 departments: Paris (75), Seine-et-Marne (77), Yvelines (78), Essonne (91), Hauts-de-Seine (92), Seine-Saint-Denis (93), Val-d'Oise (94), Val-de-Marne (95) and Oise (60). The loading and unloading points must be included in this geographical area.

   It is a dynamic economic activity zone. It has a very dense traffic especially on the departments around the city of Paris which can pose many problems including delay and accessibility during unloading and even loading.
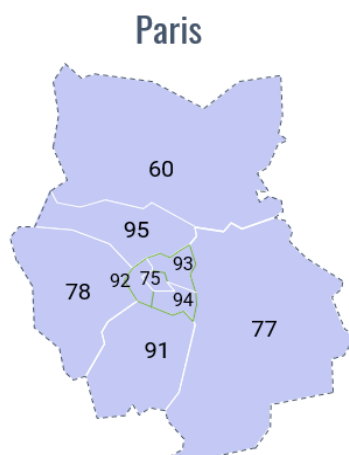
Figure 2 : Ontruck's area of operation

B) Geographical area

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C) The Ontruck service

Ontruck is a service for transporting goods on B2B (Business to Business) pallets. The pallets can be of different sizes: European (120x80 cm), American (120x100 cm) and others.

At this time, Ontruck services do not include:

- Delivery to private homes, last km not palletized

- Pallet exchange

- ADR (Agreement concerning the International Carriage of Dangerous Goods by Road)

- Temperature controlled

- Transport of containers

- Bulk, live animals, transport of machinery or motorized equipment, tanker transport, flatbed trucks

- Deliveries to trade fairs and exhibitions

Ontruck offered, until November 2021, two transportation services to these customers: Direct and Courier.

- The Direct service allows the customer to send their goods from point A to point B the same day.
- Courier service consists of grouping pallets from different shippers in a cross-dock to allow the truck to leave the cross-dock using its total capacity (the total number of pallets that can be transported) to deliver to different customers the next day. This reduces transportation costs considerably.

However, since November 2021, Ontruck has changed its strategy and decided to focus its development on its Direct service in order to increase its profitability but also to continue to develop on a service in which the company can bring real added value to its customers.

In order to better understand this added value of the Ontruck product, let's take a step-by-step look at the process of requesting transportation from Ontruck.

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First, shippers register on the platform or web application and access the form allowing them to make their quotes. They enter the number of pallets to be sent, the total weight of the goods, the maximum height, the loading/delivery point of the goods with the contact persons and finally the options of the desired vehicle (with side opening, rear elevators).

Once the form is filled in, shippers get a price (including fuel surcharge) for their shipments which may include possible surcharges, especially if the shipment request is made too late (D-day request for D-day loading/delivery) or if the loading and delivery times are too tight. Only the information concerning the characteristics of the shipment (number, weight, height, types of pallets and loading/delivery times) must be systematically filled in. The shippers' loading/delivery points are systematically registered in their customer account from the first shipment. The price obtained contains all the information concerning the shipment, i.e. the type of vehicle (Van, Box Van, Light/Heavy Rigid, Trailer) that will be used and the cost of any surcharges mentioned above.

In order to finalize the purchase of the transportation service, the customer validates his request for transportation which is taken into account at 100%, that is to say that the transportation will be carried out according to the characteristics and the modalities mentioned by the customer during the filling of his form. No risk of unavailability of transportation.

Third, once the transport request is validated, the shipment request appears on the carriers' application.

Both carriers and shippers sign up for the app on the Ontruck website. Unlike shippers, carriers are required to use a mobile app that allows them to receive shippers' transportation requests, negotiate the price of a trip, communicate with the operations team if there are any issues, and also allows customers to have full traceability of their goods, as Ontruck uses the GPS credentials of carriers' phones for these purposes.

What is interesting here is that the cost to the customer is the one for which they validated the transport request, while the cost to Ontruck of outsourcing the transport is variable.

Carriers are put out to competition and the one that accepts the lowest price usually wins, with Ontruck reserving the right to choose the carrier based on the strategic importance of the customer. Depending on the cost of the carrier, profitability can be higher or lower.

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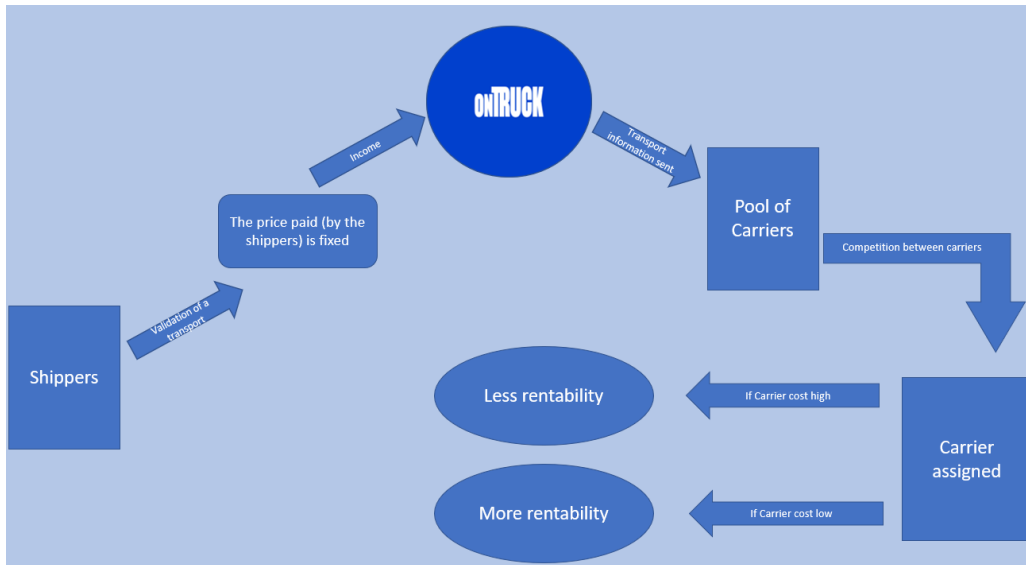
Figure 3 : Transportation demand process and profitability

1.4 - Sales activity

In this section, we will see the outcome of the Ontruck sales team's activity between October 2021 and March 2022.

<u>A) Customer identification problem</u>

Figure 4 shows that out of the 3014 calls recorded during the period, only 25.51% were "connected", i.e. the sales representative was able to reach the right person to start a sales discussion.
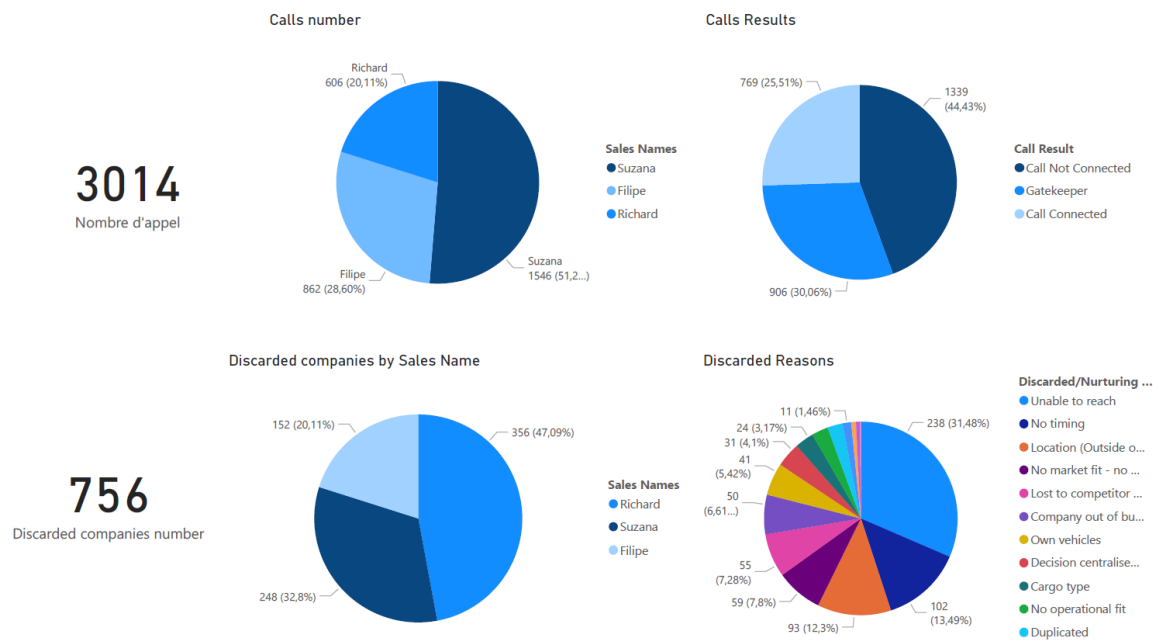
Figure 4 : Sales Activity & Discarded reasons

In addition, this graph allows us to identify the reasons why a company stops prospecting or "discards". In addition to time-based reasons such as "Unable to reach" or "No timing", the first reason why companies no longer prospect is "Location", followed by "No market fit" and "Lost to competitor". This means that these companies are no longer being prospected because, respectively, they do not ship to and from the Paris area, do not ship on pallets or have just concluded an agreement with a competitor.

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B) A problem of results

To support this customer identification problem, let's look at what the sales team's results were during the same period from October 2021 to March 2022. Through Figure 5, we can see that for a sales team composed of 3 executive sales people the acquisition of new customers was limited to 15 FTB (First time buyer) generating a net revenue of 3705.81 euros during the period from October 2021 to March 2022.
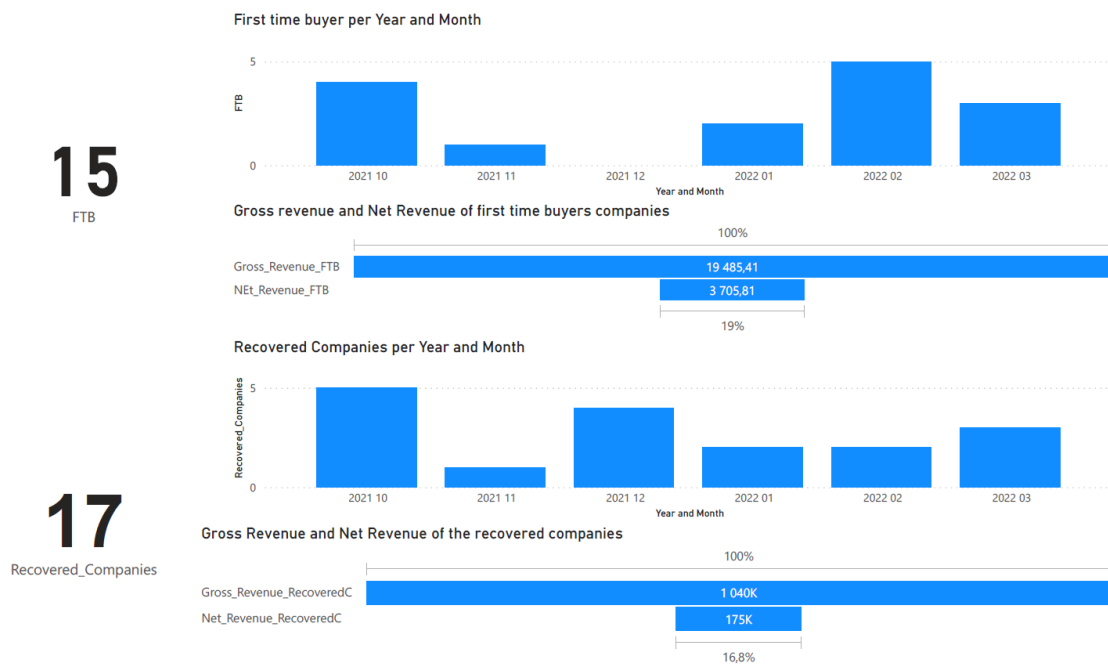
Figure 5 : First time buyers (FTB) & recovered companies

If we use the acquisition cost ratio, considering only the salary of the 3 sales executives as the total expense for the acquisition of a new customer and considering that they are equal to the minimum full-time salary in France[3] , we have:

$$\frac{Total\ expense}{Number\ of\ FTB} = \frac{29620.44}{15} = 1974.7 \qquad (1)$$

This means that to acquire a new customer, the company spends 1974.7 euros, more than a full-time minimum wage, which underlines this acquisition problem.

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[3] 1645,58 euros since 01/05/2022, which is strongly underestimated compared to the average salary of the 3 sales executives received over this period.

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On the other hand, we have 17 ''recovered companies'', which are companies that have resumed their activities with Ontruck after a minimum period of 30 days without using the application. The ''recovered companies'' generated a higher net revenue of 175,000 euros in the same period, but they don't mean much in terms of effective marketing and prospecting activity, since these companies have used Ontruck in the past. More importantly, they raise the question of why these companies used Ontruck the first time, why they didn't continue to use Ontruck, and why are they coming back? Unfortunately, due to the lack of data on this topic, I can't answer this question specifically. It is very likely that the impact of the Covid-related health restrictions between 2020 and 2021 has disrupted freight transport within the Paris region and therefore encouraged the lack of Ontruck usage.

1.5 - Questions of investigation

Given the characteristics of the product, the difficulties of acquiring new customers and the use of chargers, it seems important to identify the characteristics of the customers in order to make the acquisition of new customers more efficient.

With this objective, through the data made available by the company, we intend to find an answer through the following questions of investigation:

- What is the use of the platform by shippers in terms of number of pallets?

- How does platform usage affect gross revenues?

- How does using the platform affect the cost of carriers?

2 - LITERATURE REVIEW

The chapter dedicated to the literature review aims to identify the different forms of scientific contribution that have been developed on a given topic or phenomenon. In this sense, the research has been characterized by its bibliographic nature, contemplating mainly scientific articles and complemented by books and texts.

In this section, we intend to frame the topic, outlining the research already developed on the topic under analysis, including the models used by other researchers and the main results obtained by them. We will focus mainly on the most relevant aspects of the theoretical framework related to Ontruck's activity, namely the transport of goods, the intermediation of transport by new technologies and the specific organization of the startup.

In the following chapters, the research is characterized by its exploratory nature, through which we intend to deepen our knowledge of the determinants of transport activity in Ontruck.

2.1 - The startup: from the search for a minimum viable product to the permanent search for improvement

According to Peter Thiel (2014), technology should be seen as an opportunity, a complement, an additional tool at our disposal.

Over the last decade, the adoption of new communication tools (computers, smartphones, tablets) within society as well as the evolution of technologies have allowed the emergence of new ways of consuming, new needs and therefore new opportunities.

These have been highlighted in particular by young innovative companies, especially in the new technologies sector: start-ups. They are characterized by a new vision concerning the conception of a product and the management of a company.

Eric Ries (2014), an American entrepreneur and leading author on startups, describes a startup as "a human institution designed to create a new product or service under conditions of extreme uncertainty." In his book, he describes what he calls the "lean startup" as a new way of thinking about the supply chain and production. The name is borrowed from lean management implemented by Taiichi Ohno and Shigeo Shingo in Toyota factories, which is simply a method of managing and organizing work to improve a company's performance, quality and profitability of production. These principles include using the knowledge and creativity of individual workers, reducing batch sizes, just-in-time production, inventory control, and accelerating cycle times.

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Lean startup adapts these ideas in the context of entrepreneurship by proposing to entrepreneurs to judge their progress in a different way than traditional companies.

This approach is based on 5 principles:

- A startup can work with any company, regardless of its size, sector or industry.
- A startup is an institution. It is not only a product and requires a new way of managing, especially because of its context of uncertainty.
- Validation of lessons learned. A startup doesn't just exist to make things, make money, or serve its customers. It exists to learn how to build a sustainable business. These learnings can be scientifically validated thanks to the data collected during the different experiments (the implementation of a new service for example).
- Build - Measure - Learn. The core business of a startup is to turn ideas into a product, measure consumer reaction and learn. In other words, if the consumer reaction is good, persevere (continue in that direction), otherwise pivot (change direction). This implies for the startup to pay special attention to the customer feedback loop and to put in place measures to accelerate it.
- Accounting for innovations. How to measure progress? How to set goals? How do you prioritize work? This requires a new form of accounting for startups and the people who report to them.

The start-up must then develop a minimum viable product (MVP), test it in a market and analyze the feedback of this product in order to improve it as soon as the product generates negative feedback.

Thus, the ''lean start-up'' method settles into a ''build - measure - learn'' loop in order to constantly improve its product or service. The use of new ICTs is essential to carry out this development method.

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A) Market evolution: The Uber model

In France, we are witnessing the emergence of companies qualified as startups. In 2020, France will have more than 10,000 startups, with an increase of more than 20% each year[4] .

One of the most iconic startups of recent years, Uber, has impacted the economy to the point that some authors speak of an uberization of the consumer economy.

Indeed, in a non-empirical way, we can observe an increase in companies that, like Uber, now offer their services through an online platform (on computer or smartphone), a software as a service, more commonly known as ''apps''.

When Walker Smith (2016) talks about an ''uberization of the consumer economy,'' it implies many changes in the way we perceive how we consume, how we view the interactions between producer and consumer, but also how we view work. Let's take the example of Uber with its home meal delivery service. Uber Eat is a marketplace that allows consumers to order food from different restaurants around their geographic location and/or have their daily groceries delivered. Uber Eat does not manufacture any meals but allows the producer and the consumer but also the supply and demand of work (in this specific sector of meal delivery) to meet.

The resulting new employment opportunities have disrupted the labor market. The term ''gig economy'' is now used to describe a mode of work based on people having temporary jobs or performing separate tasks, each paid separately, rather than working for a single employer[5] . These job offers being widely available on these web or mobile applications.

To better understand how these platforms are redefining the nature of work, Steven Vallas and Juliet Schor (2020) identified 5 types of work, considering the connections and boundaries between them.

The first category includes platform architects and technologists, who are founders, highly skilled employees, and independent contractors. These workers design and maintain the digital infrastructures of platforms. As such, their work products have implications for the occupational conditions that other types of platform workers are likely to face (Irani 2013).

A second type of platform work is done by cloud-based consultants or freelancers who provide professional services via platforms such as UpWork or Freelancer. Like architects and technologists, these workers provide professional services, but they are users rather than creators of platforms. Their

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[4] KPMG Pulse
[5] dictionary.cambridge.org

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work is often not tied to an individual workplace or geographic location, although some authors (Ettlinger, 2017) find geographic clustering even on global platforms specializing in digital work. This category is defined by a high level of technical skills in areas such as graphic design, computer programming, and journalism, with workers typically hired on a project-specific basis (Osnowitz, 2011).

A third category is "gig workers," whose services are rented via platforms and typically performed offline, such as carpooling, food delivery, home repairs, and care work. There is a robust market for this type of activity, which includes delivery, day labor and odd jobs. This market is very dynamic. It offers the provider flexibility in terms of working hours and autonomy, an advantage regularly highlighted by companies. However, gig workers must not only assume responsibility for operating costs and risks and forgo the protections afforded to employees, but also conform to the temporal rhythms of customer demand, which can significantly reduce their autonomy (Ravenelle, 2019; Rosenblat, 2018; Schor, 2020).

A fourth type of platform work is done entirely online, involving what is called microtasking. These workers perform human intelligence tasks that computers cannot and are part of the machine learning process. These jobs generally require less training and experience than the work of cloud-based consultants and freelancers. Examples include describing or categorizing image content, editing computer-generated text, validating user accounts on social media, or transcribing information on websites (Wood et al. 2019). Payment is made on a per person basis. In part because microtasking encompasses a large and diverse group of workers, tasks are priced at extremely competitive rates, and the ability to earn a living wage in rich countries through microtasking is limited.

A final type of platform worker exists in the social media penumbra and includes content producers and influencers who perform what is called "platform work." Content producers and influencers who perform what Duffy (2017) calls aspirational work. This type of platform work is often provided without being paid, in hopes of achieving a sufficient level of prominence in the attention economy.

Beyond these different types of workers, Vallas and Schor (2020) define these platforms through four images that we will use later in the chapter on my personal experience at Ontruck:

- <u>Entrepreneurship Incubator:</u> Platforms have the advantage, unlike the traditional model, of offering several benefits such as: the reduction of intermediaries, transaction costs and social barriers faced by rural residents and people with disabilities. In addition, owners of homes, cars, tools, and other assets can now monetize their assets, reducing their dependence on income from their labor, especially for poorer households (Sundararajan, 2016). Algorithms, crowd-sourced ratings, and reputation information helping to reduce transaction costs and increase reliability allow workers to compete in these new markets.

- <u>The Digital Cage:</u> Algorithms are now able to fully manage workers, giving more power to companies. In effect, companies can set up work rules through digital tools that workers must use to complete their tasks. This limits the ability of workers to use tactics that allow them to outsmart the rules and expectations set up by the company as a condition of use. Platforms may set up large amounts of data about their operations but distribute it unevenly. They can also specify work rules in more detail, such as the proportion of workers who accept a similar task, the duration of the task to be performed, and the grade expected for that type of service. In this way, the work process becomes more readable for the employer (the platform) than for the worker. Second, platforms may use normative mechanisms in the form of games, symbolic rewards, or other tactics to reinforce the user's attachment to them. Finally, platforms individualize the workforce. Workers lack relational spaces to challenge the managerial authorities of platforms.

- <u>Accelerating inequality:</u> The transformative nature of institutional change highlights ''the decline of the standard work regime, the normative ideal that promised secure, full-time work with benefits and a living wage. The effect, of temporary work and subcontracting, is to transform working time into a commodity and to dissociate the worker from previous social protection systems. Platforms thus reinforce the precariousness of workers by putting under the responsibility of the worker the burdens and benefits that he or she could obtain as an employee such as minimum wage, security rules, retirement or health insurance. The platforms have succeeded in removing the responsibility of the worker in case of accident, deterioration of the work tool, waiting time between two ''paid gigs'' or costs related to misinformation of the client and loss of income. We can also add that the worker is constantly threatened to be deactivated from a platform in case of a bad rating from the client.

- <u>Institutional chameleons: As we</u> saw earlier with the lean start-up model, these platforms are conceptualized as chameleons or entities whose effects depend on the institutional environments in which they operate. They are built to be implemented in all markets.

B) New opportunities

After seeing a rather pessimistic view of the use of on-demand service platforms, especially from the point of view of the casualization of employment, we will see how platforms can also be an open door to other horizons and create new opportunities.

Let's take the most obvious case, McDonald's. Before the advent of Uber, McDonald's did not deliver food to the home (as did the majority of restaurant owners). Before the advent of mobile apps, consumers (customers) went directly to producers (service providers) to initiate and complete a full transaction. In the concept of ''Uberization'' described by Walker Smith (2016), the consumer does not go to the producer, but the producer comes directly to them through an online platform.

As a result, ''marketplace'' applications and their websites have become extremely popular. An online marketplace is a website or application that facilitates the purchase of goods or services through various sources[6]. It is simply a place where supply and demand for a good or service meet.

Indeed, in a non-empirical way, we can see a growing appetite for using platforms that can do the work for users, whether it's booking a flight or outsourcing their activities. Consumers need to get what they are looking for faster and easier than ever before.

In line with Walker Smith (2016), the ''uberization'' of our economy also involves a shift in expectations about the time it takes to satisfy a need, particularly with more and more need for immediacy. This change in the way we consume is contributing to changes in our behavior as consumers and is spreading to all sectors of our economy.

Technology is opening opportunities and mobile apps are allowing startups to build enough demand to support this new business model. This model is an on-demand, anytime, anywhere service. An important consequence of on-demand availability is tiered pricing tied to opportunity. Many on-demand mobile services are now subject to premium pricing, but this is not the essence of on-demand pricing, and premium pricing will decline as competition and scale develop. The essence of on-demand pricing is pay-per-use.

Today, the pricing system is essentially possession-based (even if the good or service is not used). The pricing system of Uber's business model is based on usage. A brand only sells what the consumer needs now to request a good or service.

This has two implications:

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[6] Forbes

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First, it erodes the need for ownership. Access replaces ownership at the center of consumer aspirations. Moreover, access instead of ownership means that consumers pay only the marginal cost of production, leaving less room for producer and retailer margins.

Second, the focus of pricing shifts from targeting individuals to targeting occasions: from flat rates that are the same regardless of the occasion to rates that better match demand to the occasion.

In this approach, there is no stream of consumers or drivers at Uber, only a "stream of opportunities." For example, the price of a ride during peak hour will be more expensive than during off-peak hour because of the demand for transportation.

This bifurcation of prices based on opportunity is consistent with a broader economy that moves up and down. Lack of time or money doesn't just push people to the low end, it pushes them to the high end. When you have little time or money, spending it on something average is just as much a waste as spending too much on something bad. In other words, consumers want "Superstar" offers as much as they want "Super-Sale" offers. Businesses need a pricing proposition that allows them to access both. That's exactly what the "Uber all" model does.

Through the use of big data, Walker Smith (2016) anticipates new forms of consumption, including the shift from on-demand to "known demand" service. This is simply the anticipation of consumer needs, meaning that before the consumer even knows they are going to need something, the algorithm will be able to place the order.

The applications will then be considered as personal assistants that sort the different consumption options according to the personal preferences and habits of the individuals.

Finally, for the author, the uberization of our economy is bringing new forms of social interaction to the consumer market, and it is the nature and meaning of work that will be most affected: "If everyone is integrated into a social context fundamentally based on service relationships rather than on the manufacture and marketing of goods, then networks of connection and contact will become an integral part of life, reviving community and nurturing relationships, long known to be the deepest sources of happiness and satisfaction in life.

2.2 - Towards an "Uberization" of transport?

According to the French Ministry of Ecological Transition, by 2021, logistics will account for 10% of national GDP, €200 billion in sales and 1.8 million jobs[7] .

In this section, we draw heavily on the work of Edward Frazelle (2001) and others to describe what logistics and the supply chain are, to better understand the role of transportation in them, and the role those new technologies must play.

In the 1950s and 1960s, the military was the only organization to use the term "logistics."

According to Frazelle (2001), logistics is the flow of materials, information and money between consumers and suppliers.

We identify 5 phases in the development of logistics:

- Beginning in the 1950s, "workplace logistics" refers to the flow of materials at a single workstation. The goal of workplace logistics is to streamline the movements of an individual working on a machine or assembly line.
- In the 1960s, "facility logistics" was the flow of materials between workstations within the four walls of a facility (i.e., between workstations and within the facility). The facility may be a factory, terminal, warehouse or distribution center. Facility logistics is more commonly referred to as material handling.
- 1970s, "Corporate Logistics": Corporate logistics became a process with the common goal of developing and maintaining a profitable customer service policy while maintaining and reducing total logistics costs.
- 1980s, "supply chain logistics": flow of materials, information and money between companies (between workstations, between facilities, between companies and between chains).
- Since the 1990s, "global logistics" has been the flow of materials, information and money between countries.

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[7] Ministry of Ecological Transition

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What's next? With the evolution of ICT, many logisticians say that collaborative logistics could be the next evolution. This model is based on optimization and continuous communication between different logistics partners. What is certain is that logistics will continue to play a major role in the success or failure of most businesses and its influence will continue to grow as information systems and management theories continue to evolve.

But in the end, what is the logistics business? Logistics is an agglomeration of interdependent activities: Customer response, inventory management, procurement, transportation and warehousing (Frazelle, 2001).

Customer response links logistics externally to the customer base and internally to sales and marketing. Customer response is optimized when the customer service policy that generates the lowest cost of lost sales, inventory maintenance and distribution is identified and executed. Customer response logistics include the following activities

The objective of inventory planning and management is to determine and maintain the lowest possible inventory levels that will meet the requirements of the customer service policy as outlined in the customer service policy.

Procurement is the process of building inventory (through manufacturing and/or procurement) based on the objectives established in inventory planning. The objective of supply management is to minimize the total cost of ownership while meeting the availability, response time and quality requirements stipulated in the customer service policy and inventory master plan. Supply logistics includes

Transportation physically connects the sources of supply chosen during the search for suppliers to the customers we have decided to serve as part of the customer service policy.

The objective of transportation is to connect all pickup and delivery points within the response time requirements of the customer service policy and the limitations of the transportation infrastructure at the lowest possible cost.

Warehousing is the last of the five logistics. The objective of warehousing is to minimize the cost of labor, space and equipment in the warehouse while meeting the cycle time and shipping accuracy requirements of the customer service policy and the storage capacity requirements of the inventory game.

Customer analysis in a provider of electronic services in the field of freight transport.

2.3 - Transportation and technology

According to the definition of the INSEE[8] , freight transport includes any movement of goods on board any mode of transport: rail, road, river, sea, air, etc. It is measured in ton-kilometers or, on a given route, in tons. It is measured in ton-kilometers or, on a given journey, in tons.

Merchants can have their own fleet of vehicles, contract directly with a carrier or use freight forwarders to meet their transportation needs.

With smaller orders, more frequent orders, increased international trade, e-commerce and global logistics, and rising fuel costs, transportation costs are increasing disproportionately and rapidly compared to other logistics costs. It is therefore important to better understand what transportation costs encompass in addition to the basic costs generated by the core logistics activity.

Total transportation cost includes freight, fleet, fuel, maintenance, labor, insurance, loading/unloading, demoralization/detention, taxes/taxes and international fees.

In a basic transportation transaction, a shipper pays a carrier to transport goods from an origin to a destination where the consignee receives the cargo. The payment to the carrier is called a freight payment and the document describing and contracting the movement of the goods is called a bill of lading.

The carrier can be a parcel/express carrier (UPS, Fedex), a less-than-truckload (LTL) trucking company (Ontruck's specialty), a full truckload (FTL) trucking company (Schneider, Ontruck), an ocean carrier (Maersk), a railroad, or an air carrier/integrator (DHL).

Traders may have their own fleet of vehicles, contract directly with a carrier, or use freight forwarders to meet their transportation needs. The overall objective of transportation should be to connect supply locations to customers at the lowest possible transportation cost.

To achieve these different objectives, the use of new technologies is essential. According to Edward Frazelle (2001), of all logistics activities, ''transport is in some ways the least developed in terms of organization''. Technology can therefore play an important role in the management of transport, of carriers, by improving the quality of service, reducing costs but also environmental impact.

The freight service problem (FTSP) is to match shippers' transportation needs with carriers' capacities in freight markets. In line with the Mines paris-tech scientific management center (Lafkihi et al, 2019), there is a popular demand for on-demand services where the shipper (customer) pays a known price via a platform for each on-demand service, i.e., spot markets with service catalogs. In addition, the demand

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[8] Institut National de la statistique et des études économiques

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for freight transport is expected to be increasingly sensitive to sustainability, which is becoming a major constraint in transportation, especially for urban logistics.

As part of its business, Ontruck provides its customers with SaaS (Software as a Service) which is part of a cloud computing system that allows any user with a computer, tablet or cell phone to use their service as long as they have an internet connection.

Cloud computing is a model for enabling ubiquitous, convenient, and on-demand network access to a shared space of computing resources that can be rapidly provisioned and released with minimal management effort or interaction with the service provider. According to Grzybowska et al. (2014), cloud computing in the supply chain enables (1) unlimited flexibility: with access to millions of different software and databases, and the ability to combine them into customized services, users are better able to find the answers they need, share ideas, and save money. (2) increased reliability and security; (3) enhanced collaboration: By enabling online sharing of information and applications, the cloud offers users new ways to work together; (4) portability: Users can access their data and tools anywhere they can connect to the Internet; (5) device simplification: Because data and software are stored in the cloud, users do not need a powerful computer.

Similarly, cloud computing, coupled with information technology (IT), is enabling companies to achieve productivity gains. A study conducted by the Trisakti Institute of Transportation and Logistics (Syntia et al, 2020), estimates that implementing an online delivery order offers several benefits through integrated, cashless, paperless, and environmentally friendly systems. Therefore, implementing an online delivery order will help to reduce operating costs for freight companies, facilitate the flow of goods and people, reduce wasted time, and improve the efficiency of company operations. This would save 81% time, reduce queues by 85% and reduce costs by 60% as the transportation operation at the point of delivery will be more efficient.

In 2020, nearly one-fifth of the freight transport sector's mileage was driven empty (20% exactly, 24% for domestic transport and 16% for international transport)[9] . According to Balamurugan et al (2018), it is possible to reduce costs and improve the profitability of a transportation company through technology. Indeed, by moving from a system where a vehicle makes a two-stage trip with multiple suppliers and multiple customers to a system where a centralized collection and distribution center is incorporated between suppliers and customers, we can reduce the number of empty miles traveled and thus we can reduce the environmental impact by reducing carbon dioxide emissions.

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[9] Eurostat

Customer analysis in a provider of electronic services in the field of freight transport.

Further optimization is possible through a decentralized and collaborative information system. This can be done by optimizing decision making, routing and even an application for the carrier and/or shipper to facilitate communication. A carrier collects freight requests from multiple shippers and proposes a rate based on its existing route network and the routes it plans to use at the time of service. A line is the delivery of a shipment from origin to destination with a full load. An important element of the cost issue for the carrier is repositioning. This is the movement of an empty truck between a delivery point and a loading point. The ratio of dead load (empty trucks) cost to total cost decreases significantly (from 11.7 percent to 4.5 percent) due to collaboration among shippers (Özener and Ergun, 2008).

In addition, to further reduce deadweight, the carrier can use an artificial intelligence system to optimize its shipment planning. A shipment is simply a set of goods that travel together, and shipment planning is the process of choosing the frequencies of shipments and deciding for each shipment which goods should be assigned to the shipment, the mode of transportation, the appropriate carrier, the route, and the timing of the shipments (when to pick up and when to deliver the goods). Artificial intelligence is a very broad branch of computer science that enables machines to function like a human brain. It solves a variety of problems that are difficult to solve using traditional computing techniques. According to D. Gangwani and P. Gangwani (2021), artificial intelligence can deal with real-time transportation problems such as road anomalies, traffic accidents, energy expenditures, inadequate infrastructure, safety, and traffic congestion. It is a tool that can help transportation companies anticipate and detect potential delivery problems, facilitate good decision making, and reduce operational costs. A good cost allocation mechanism should encourage shippers to collaborate, facilitate contractual agreements and help maintain collaboration among shippers.

2.4 - Determining the success of a startup

In this study, we want to take advantage of econometric models for marketing purposes by highlighting certain variables in order to bring about a change in terms of prospecting and acquiring new customers based on the usefulness or use of the platform by current customers. The final intention is to give an indication of what differentiates us in the transportation market but also to give an indication of the characteristics of the companies to approach.

Market orientation and has been shown to be directly related to firm performance (Kirca et al.,2005; Lado et al., 2013; Liao et al., 2011). Market orientation is defined as an approach to business that prioritizes identifying consumer needs and wants and creating products and services that satisfy them. However, the link between market orientation and firm performance is not direct, so the impact of market orientation on growth remains unclear (Murray et al., 2011; Taylor et al., 2008; Zahra, 2008; Liao et al., 2011). Some authors link market orientation to firm performance through competitive advantages and dynamic firm capabilities. According to Porter (1985), competitive advantage refers to a comparatively superior market position that leads the firm to outperform its competitors and each firm can achieve competitive advantage through: cost, by operating at a lower cost than its competitors for a comparable product; differentiation, which implies that the firm has a "non-price" attribute that distinguishes it as superior to its peers. Dynamic capability is the ability of the firm to integrate, develop and reconfigure its internal and external competencies to cope with a rapidly changing environment (David J. Teece et al., 1997). Therefore, dynamic capabilities and competitive advantages mediate the relationship between market orientation and firm performance. Market orientation drives firm performance and leads to the development of a set of dynamic capabilities that generate competitive advantages and improve firm performance (Correia et al., 2021).

According to Lasch et al (2007), the variables that have a strong impact on the success or failure of a start-up are the human capital (related to the education and work experience of the worker), the work experience of the entrepreneur, but also the initial organization of the start-up (size of the company, market and customer orientation, capital).

CHAPTER 3 - DATA, VARIABLES AND ECONOMETRIC MODELS

3.1 - Brief explanation of this chapter

In this chapter, we will proceed with the characterization, data selection and restrictions that lead us to the construction of this sample. We will also proceed to the measurement of each variable considered. The Stata 15 program was used for this purpose.

3.2 - Sample and database

Using the data made available by the company, I focused on the data for all shipments made in 2022, from January to March, in order to proceed with the selection of relevant information to answer the problem. The database consists of a sample of 4856 runs (or shipments) with their operational information.

Find the database by clicking here.

In order to carry out this study, I decided to delete all shipments in which a price agreement was fixed. This decision was motivated by the fact that I have no information on the price agreements obtained but also that by essence the price agreements fix the price of the transport service for the customer (shippers) and the cost of the carriers. Therefore, the margin and the net income per shipment are also fixed by these price agreements.

Thus, the study focuses on a sample of 3193 shipments with no prior price agreement, which will allow us to study the variations of the dependent variables with respect to the independent variables in a better way.

3.3 - Choice and definitions of empirical variables

A) Dependent variables

To address the problem, I was interested in the variables that take into account the incoming and outgoing revenues of each transport operation.

The Ontruck service creates two relationships: the relationship between Ontruck and shippers and the relationship between Ontruck and its network of carriers.

The relationship between shippers and Ontruck is reflected in the ''GrossRevenue'' variable, which is simply the total price paid by customers for all transportation services provided. Remember that once customers have validated the transport, they should not pay any additional charges, unless they are

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directly related to problems that may occur during the transport. Apart from these exceptional cases, the price paid by the shippers is equal to the amount displayed once the form is completed.

The variable "GrossRevenue" was transformed to ensure the stability of the regressors, in order to reduce outliers. To do this, we used the "gen" command as follows:

$$\text{Gen lngrossrevenue} = \ln(\text{GrossRevenueEUR}) \qquad (2)$$

On the other hand, we have the relationship between Ontruck and the carriers. In order to determine the cost of the carriers, we subtracted the incoming revenue from the net revenue resulting from the difference between what customers pay and what Ontruck pays for transportation services.

The CarrierCost variable was created as follows:

$$\text{Gen CarrierCost} = \text{GrossRevenueEUR} - \text{NetRevenueEUR} \quad (3)$$

$$\text{Gen lncarriercost} = \ln(\text{CarrierCost}) \qquad (4)$$

The variables "lncarriercost" and "lngrossrevenue" will be the dependent variables used in the econometric model that we will present in the following section.

B) The independent variables

The independent variables chosen for this study are variables concerning the operational characteristics of each transport.

First of all, the number of pallets transported. The number of pallets transported plays a role in the price paid by the shipper, i.e. the "gross revenue", but also in the "Carrier cost", as it can influence the type of vehicle used, depending on the loading capacity of the vehicle required to transport a certain number of pallets. The number of pallets that can be transported at one time varies from 1 to 33 pallets.

Table 1 shows that approximately 88.1% of the shipments made by Ontruck are transports of 1 to 10 pallets, while the 11.9% missing shipments concern transports of 11 to 33 pallets. These figures are consistent with Ontruck's business and, in particular, with its geographical area of operation, since Ontruck specializes in last-mile freight.

Num_pallets	Freq.	Percent	Cum.
1	1,326	41.53	41.53
2	419	13.12	54.65
3	254	7.95	62.61
4	188	5.89	68.49
5	145	4.54	73.03
6	85	2.66	75.70
7	56	1.75	77.45
8	120	3.76	81.21
9	67	2.10	83.31
10	153	4.79	88.10
11	37	1.16	89.26
12	33	1.03	90.29
13	27	0.85	91.14
14	47	1.47	92.61
15	13	0.41	93.02
16	20	0.63	93.64
17	6	0.19	93.83
18	72	2.25	96.09
19	3	0.09	96.18
20	22	0.69	96.87
21	19	0.60	97.46
22	4	0.13	97.59
24	3	0.09	97.68
25	3	0.09	97.78
26	2	0.06	97.84
27	1	0.03	97.87
28	1	0.03	97.90
29	1	0.03	97.93
30	3	0.09	98.03
32	1	0.03	98.06
33	62	1.94	100.00
Total	3,193	100.00	

Table 1 - Number of shipments per pallets

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It was chosen to convert the variable "NumPallets", representing the number of pallets on the truck during a transport, into a dummy variable. A dummy variable is a variable that takes the value of 1 or 0 in order to indicate the presence or absence of a certain categorical effect that can modify the result. Therefore, I decided to separate the "NumPallets" variable into two categories:

1) The number of pallets is less than or equal to 10
2) The number of pallets is greater than 10.

Thus, the variable "Palette10" was created:

$$\text{Gen Pallet10=NumPallets<=10} \qquad (5)$$

The values of "NumPallets"$<$ =10 taking the value 1 and the values of "NumPallets"$>$10 taking the value 0.

 Secondly, the type of vehicle in charge of the transport. The choice of this variable seems just as natural as the first. Ontruck uses a database of transporters to carry out its customers' trips. Not all of them have the same types of vehicles and the use of each of these vehicles does not cost the same and does not meet the same needs. Therefore, it makes sense to use dummy variables to determine the impact of each vehicle type on the carrier's gross revenue and cost.

 The type of vehicles is represented by the variable "Vehicletype" and in order to use the dummy variables for the linear regression, we use the command "i.vehicletype". The variable "1.vehicletype" related to the vehicles of type "Box Van" will be considered in the constant of each linear regression.

Table 2 shows the use of vehicles over the period. The most used vehicle is the Box Van, which accounts for 35.14% of the Ontruck shipments in this sample.

Vehicle_type	Freq.	Percent	Cum.
Box Van	1,122	35.14	35.14
Heavy Rigid	167	5.23	40.37
Light Rigid	974	30.50	70.87
Trailer	97	3.04	73.91
Van	833	26.09	100.00
Total	3,193	100.00	

Table 2 - Vehicle utilization per shipment

The 3 other variables used in the models are operational variables. First of all, we have the "Standstill" variable which corresponds to the involuntary stop of the vehicle (traffic problem or logistic problem at the loading/unloading point) and which can potentially generate additional costs for the shippers, we have the "OntimeRate" variable which corresponds to the punctuality during the trip (the shipment respected the loading/unloading time slots) and finally we have the "Grouping" variable which corresponds to the consolidation of goods coming from several consignments, allowing to reduce the cost of the transport.

These 3 independent variables are dummy variables and take the following values:

- 1 if the independent variables are verified in reality
- 0 if the independent variables do not occur (no capitalization, no consolidation and late delivery)

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3.4 - Descriptive analysis of empirical variables

In summary, we present below the table with the descriptive analysis of all the variables used in this study, both independent and independent, described above.

Variable	Obs	Mean	Std. Dev.	Min	Max
lncarrierc~t	3,187	4.148813	.6498393	2.302585	6.214608
lngrossrev~e	3,153	4.476939	.5499971	3.367296	6.39693
Pallet10	3,193	.8809897	.3238514	0	1
Vehicletype	3,193	2.797056	1.578411	1	5
Standstill	3,193	.0281867	.1655317	0	1
Grouping	3,193	.5565299	.4968719	0	1
OntimeRate	3,193	.9530222	.2116244	0	1

Table 3 - Description of the variables of the econometric model

	lncarr~t	lngros~e	Pallet10	Vehicl~e	Stands~l	Grouping	Ontime~e
lncarrierc~t	1.0000						
lngrossrev~e	0.8759	1.0000					
Pallet10	-0.5306	-0.5550	1.0000				
Vehicletype	-0.0739	-0.2255	-0.0568	1.0000			
Standstill	0.0917	0.0899	-0.0146	0.0543	1.0000		
Grouping	-0.3350	-0.2781	0.1976	-0.0416	-0.0444	1.0000	
OntimeRate	-0.0636	-0.0735	0.0192	0.0359	0.0179	-0.0189	1.0000

Table 4 - Pearson Correlation coefficient

Pearson's correlation coefficient measures the relationship between two variables within the same metric. The function of the correlation coefficient is to determine the strength of the relationship that exists between the data sets. By analyzing this table, we can attest that there is indeed a strong positive correlation between the gross revenue variable and the transportation cost variable. This means that as gross revenue increases, so does the cost of carriers.

3.5 - The Econometric Model: Variation of Gross Revenue and Carrier Cost as a Function of Independent Variables

The data are organized in such a way as to allow for as complete an econometric analysis as possible over the period considered.

Despite this, there are still standard errors and in order to ensure the homoscedasticity of the model, we used the command "robust standard errors" and checked if the residuals of each model the normality of the model graphically.

Two models were estimated by estimating, for each regression, that the only variable that changes is the dependent variable. The objective is to establish a relationship between the relationship between the independent and dependent variables in order to answer the investigative questions and the problem.

The econometric model used consists of a linear regression analysis using the OLS (ordinary least squares) model. In this way, the linear model aims to explain the variation of the dependent variable by the variation of the levels of the independent variables. In this study, a multiple linear regression will be applied, since more than one independent variable will be incorporated. Assuming that the variables that directly affect gross revenue and carrier cost are the variables concerning the number of pallets and the type of vehicles, we intend to estimate the following models:

<u>Model 1</u>

Ingrossrevenue = $\beta 0 + \beta 1$ Pallet10 + $\beta 2$ i.vehicletype + $\beta 3\ dummie$ standstill + $\beta 4\ dummie$ Grouping + $\beta 5\ dummie$ Ontimerate + ε

With Pallet10, Vehicletype and operational dummies are all independent variables.

$\beta 0 \ldots \beta k$ consist of the unknown parameters of the model, i.e., the coefficients of the regression to be estimated. ε consists of the residual, which is intended to incorporate into the model all influences that are not explained by the independent variables on the variation of the variable Y.

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Model 2

lncarriercost = $\beta0 + \beta1$ Pallet10 + $\beta2$ i.Vehicletype + $\beta3\ dummie$ standstill + $\beta4\ dummie$ Grouping + $\beta5\ dummie$ Ontimerate + ε

With Pallet10, Vehicletype and operational dummies are all independent variables.

$\beta0 \dots \beta k$ consist of the unknown parameters of the model, i.e., the coefficients of the regression to be estimated. ε consists of the residual, which is intended to incorporate into the model all influences that are not explained by the independent variables on the variation of the variable Y.

CHAPTER 4 - RESULTS AND DISCUSSION

4.1 - Factors explaining the variation in gross revenue and carrier costs

  As mentioned in the previous chapter, we will present and analyze the results obtained using the

STATA 15 program. We will accompany the analysis with findings from other studies mentioned in our

literature review, so that we can assess the accuracy of the results. Thus, we have:

Model 1

VARIABLES	(1) lngrossrevenue
Pallet10	-0.337***
	(0.0195)
2.Vehicletype (Heavy Rigid)	0.619*** (0.0271)
3.vehicle type (Light rigid)	0.481*** (0.0118)
4.vehicle type (Trailer)	0.873*** (0.0290)
5.vehicle type (Van)	-0.428*** (0.0148)
Standstill	0.249***
	(0.0305)
Grouping	-0.0945***
	(0.0109)
OntimeRate	-0.0714***
	(0.0256)
Constant	4.797***
	(0.0335)
Observations	3,153
R-squared	0.728

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5 - Linear regression model 1 (Stata 15)

Model 2

VARIABLES	(1) lncarriercost
Pallet10	-0.340***
	(0.0230)
2.Vehicletype	0.828***
(Heavy Rigid)	(0.0364)
3.vehicle type	0.702***
(Light rigid)	(0.0168)
4.vehicle type	1.064***
(Trailer)	(0.0330)
5.vehicle type	-0.248***
(Van)	(0.0184)
Standstill	0.268***
	(0.0389)
Grouping	-0.191***
	(0.0133)
OntimeRate	-0.0502
	(0.0331)
Constant	4.369***
	(0.0414)
Observations	3,187
R-squared	0.668

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6 - Linear regression model 2 (Stata 15)

We performed the collinearity test with the "vif" command and checked if the residuals follow a normal distribution for each model (See Table 7, Figure 6 and 7). For each model, the variables are moderately collinear, and the residuals follow a normal distribution.

<u>Model 1 (lngrossrevenue)</u>

Variable	VIF	1/VIF
Pallet10	1.60	0.626846
Vehicletype		
2 (Heavy rigid)	1.24	0.806568
3 (Light rigid)	1.48	0.677773
4 (Trailer)	1.51	0.663355
5 (Van)	1.29	0.774052
Standstill	1.01	0.993537
Grouping	1.08	0.924075
OntimeRate	1.01	0.992612
Mean VIF	1.28	

<u>Model 2 (lncarriercost)</u>

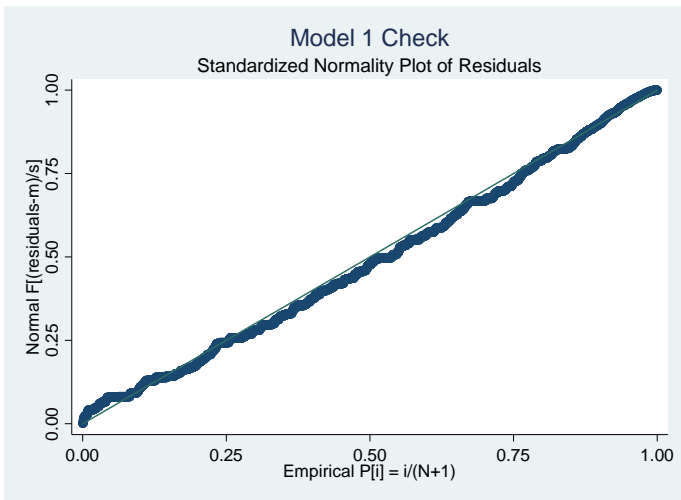| Variable	VIF	1/VIF
Pallet10	1.59	0.628002
Vehicletype		
2 (Heavy rigid)	1.24	0.805356
3 (Light rigid)	1.48	0.675101
4 (Trailer)	1.50	0.667027
5 (Van)	1.29	0.774287
Standstill	1.01	0.993552
Grouping	1.08	0.922614
OntimeRate	1.01	0.990406
Mean VIF	1.28	

Table 7 - Test of Multicolinearity with "vif" command (Stata 15)
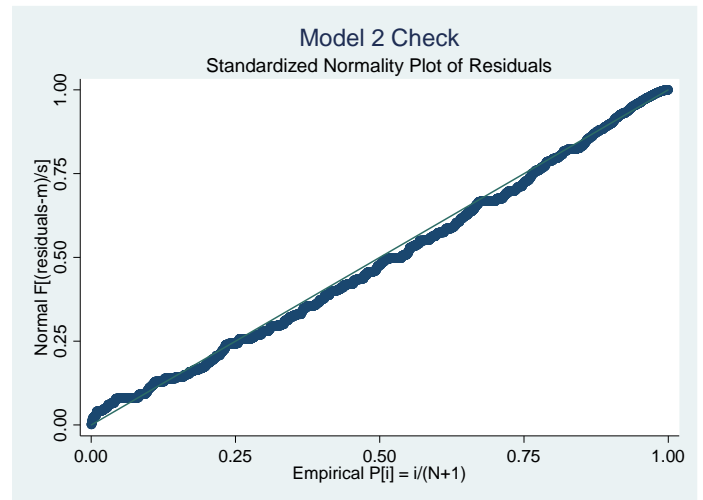

Figure 7: Test of normality of the residuals in model 1

Figure 6: Test of normality of the residuals in model 2

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4.2- Discussion of the results

First, concerning the effects of the independent variables on the variation of the "Gross revenue", we can say that the variable "Pallet10" affects negatively the gross revenue during the analyzed period. When the number of pallets is less than or equal to 10, it has a negative impact on gross revenue compared to a number of pallets strictly greater than 10, the results being statistically significant (p-value>0.01).

The results obtained for the "Type of vehicle" variable indicate which types of vehicles have the most impact on gross revenue growth. Thus, the vehicles with the most positive impact on gross revenue are, in ascending order, vans, box vans, light rigids, heavy rigids and trailers, the results also being statistically significant (p-value>0.01). These results are simply explained by the loading capacity of the vehicles, the more cargo a vehicle is able to load, the higher the cost to the customer.

Second, with respect to the effects of the independent variables on the change in "carrier cost" (Model 2), we can say that all the independent variables in Model 2 vary in the same direction as the variables in Model 1. The difference between Model 1 and Model 2 are the coefficients at which the independent variables vary if the dependent variable increases by one unit.

Coefficient	Model 1 (lngrossrevenue)		Model 2 (lncarriercost)
Pallet10	-0.337	>	-0.340
Heavy rigid	0.619	<	0.828
Light rigid	0.481	<	0.702
Trailer	0.873	<	1.064
Van	-0.428	<	-0.248
Standstill	0.249	<	0.268
Grouping	-0.0945	>	-0.191
OntimeRate	-0.0714	<	-0.0502
Constant	4.797	>	4.369

Table 8 - Comparison of the coefficient of model 1 and model 2

When the number of pallets is less than 10, the coefficient of model 1 is greater than that of model 2. Since both coefficients are negative, this means that when the number of pallets transported is less than or equal to 10, the carrier's cost decreases faster than the gross revenue. This means an increase in net revenue compared to the situation where the number of pallets is greater than 10. There is more profitability when the transport involves a number of pallets less than or equal to 10.

Num_pallets	Box Van	Heavy Rigid	Light Rigid	Trailer	Van	Total
1	637	21	60	0	608	1,326
2	198	9	76	0	136	419
3	121	6	71	1	55	254
4	58	6	99	0	25	188
5	65	5	70	0	5	145
6	26	13	45	0	1	85
7	5	9	40	0	2	56
8	8	5	105	2	0	120
9	0	5	61	0	1	67
10	3	13	136	1	0	153
11	0	13	24	0	0	37
12	0	6	27	0	0	33
13	1	6	18	2	0	27
14	0	2	44	1	0	47
15	0	4	8	1	0	13
16	0	4	15	1	0	20
17	0	1	5	0	0	6
18	0	3	67	2	0	72
19	0	2	0	1	0	3
20	0	19	1	2	0	22
21	0	15	0	4	0	19
22	0	0	1	3	0	4
24	0	0	0	3	0	3
25	0	0	1	2	0	3
26	0	0	0	2	0	2
27	0	0	0	1	0	1
28	0	0	0	1	0	1
29	0	0	0	1	0	1
30	0	0	0	3	0	3
32	0	0	0	1	0	1
33	0	0	0	62	0	62
Total	1,122	167	974	97	833	3,193

Table 9 - Repartition of vehicles by number of pallets

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In order to determine which vehicle is most profitable for the company, let's focus on the type of vehicle used for shipments. Table 9 shows us the most used vehicles according to the number of pallets. The most used vehicles are the Box Van, the Van and the Light Rigid respectively.

Looking at Table 8, we can say that the most cost-effective vehicle is the Box Van, because if all the dummy variables corresponding to the vehicle types are equal to 0, the "lncarriercost" constant increases less quickly (see the "Van" coefficient), or it decreases more quickly (see the "Heavy/Light rigid" and "Trailer" coefficients) than the "lngrossrevenue" constant. The difference between the "lncarriercost" and "lngrossrevenue" constant is greater when the vehicle used is a Box Van.

For the independent operational variables, we find that, paradoxically, good punctuality ("OntimeRate") of transport has a negative effect on gross revenue. This is due to the absence of additional costs related to a transport-related problem such as "Standstill" which, not surprisingly, has a positive effect on gross revenue, just as consolidation has a negative effect on gross revenue due to the reduction in operational costs it induces.

R-squared is a measure of how well a generalized linear statistical model, such as linear regression, fits the observed values. The R-squared varies between 0 and 1, indicating, in percentage terms, how well the model can explain the observed values. The higher the R-squared, the more explanatory the model is, the better it fits the sample. Thus, we can say that model 1 and model 2 explain respectively, 72.8% and 66.8% of the variations of the dependent variables. Moreover, all the independent variables are statistically significant with a confidence level of 99% (P-value>0.01).

CHAPTER 5 - CONCLUSION

This chapter presents the main findings of the study, seeking to answer the proposed research questions. At the same time, it seeks to reflect on the main limitations of this internship report, seeking to provide recommendations for the future.

5.1 - Limitations

All work is subject to limitations. For this study, there are several limitations. The database used was created at the beginning of 2022, so there was no possibility of comparing data over time. It has many limitations due to the lack of variables on commodity type and/or industry, commodity weight, distance traveled, or more specific information on carriers (other than vehicle type).

Moreover, this study does not allow me to identify precisely the size of the companies for which Ontruck should concentrate its acquisition, since the only explanatory variable used, which influences the need for vehicles, is the number of pallets transported.

5.2 - Conclusion and recommendations

The choice of the subject is the result of a problematic shared by the whole commercial team during the curricular internship carried out between September 2021 and March 2022. The company is facing an important need for acquisition and profitability. Because of this, the intent of this study was to refocus on what the company does, why Ontruck users use the platform, and how that usage affects gross revenue and carrier costs, the two variables that determine the company's margin for each shipment.

Given the limitations we discussed, we used the variables of number of pallets and types of vehicles used for each shipment. This was done with the intention of better understanding the characteristics of the users of Ontruck services and thus recognizing the characteristics of the shippers (customers) to be prospected.

What emerges from this study is that the majority of Ontruck's business is focused on the transportation of 1 to 10 pallets that are transported primarily by Van, Box Van and Light rigid. These variables generally have a more pronounced impact on carrier costs. And according to the results, the most profitable type of shipment for the company is a shipment of less than 10 pallets transported by a Box Van. Carriers with box vans are statistically more profitable for the company than carriers with other types of vehicles.

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On the other hand, as explained in the first part of this internship report, the transport request process starts with the validation of the request by the shippers who pay an amount determined by the price generated when entering their forms. The information is then transmitted to the carrier who competes in the market of carriers present in the Ontruck database to be assigned the transport requested by a shipper (see figure 3). The shippers influence the profitability of the shipments because of the characteristics of their transport request, here the number of pallets. The higher the number of pallets, the higher the demand for vehicles with larger loading capacity, the higher the shipper's cost and the lower the profitability. However, as mentioned in the limitations, the data we have at our disposal does not allow us to clearly identify a type of shipper. We cannot distinguish between variations in gross revenue or carrier cost depending on the size of the companies that use Ontruck.

However, I would recommend that Ontruck focus its procurement activity in companies that need to ship between 1 and 10 pallets per shipment and focus on using Box Van to ship the goods to be more cost effective. These results are not surprising since the bulk of Ontruck's business is already focused on these two characteristics. However, in order to be more precise about the companies to prospect, I would recommend that Ontruck focus on small and medium-sized companies or ideally on companies that are expanding. In fact, the logistics in these companies may lack resources, be less developed and therefore easier to modify than in large, more structured companies. Moreover, it may be easier to have direct access to a decision-maker regarding transport, which could also facilitate the acquisition activity.

Also, acquisition takes time. When we call someone, especially in this market, there is little chance of getting a deal on the first call, so we have to deal with unconnected calls and gatekeepers. Thus, the lack of efficiency in acquisition can be explained by a more practical problem, as shown in Figure 4, such as the problem of identifying the right prospect (see the discarded reasons for location, no market fit, out of business or own vehicles) which leads us to spend time prospecting companies that should not be part of our target. This study will have had the merit of identifying what Ontruck is really good at, but also identifying areas where profitability is lower

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