

A Work Project, presented as part of the requirements for the Award of a Master's degree in  
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GI Expansion to the Netherlands- Business Growth Strategy

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## **01. Abstract**

This work project presents a comprehensive plan for the international expansion of GI, a corporation which operates in the Portuguese glass industry. The study involves a meticulous company and industry analysis. Followed by the process of selecting a target international market, encompassing clustering and ranking countries based on their highest potential. The Netherlands was selected, which GI is recommended to enter through direct exports. This decision is supported by the development of a robust business and marketing strategy to support the project implementation. A financial forecast is included, demonstrating the project's profitability and long-term viability.

Keywords: Strategy Diamond, Differentiators, Economic Logic, Market Entry Conditions, Market Research

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## **02. Introduction**

With a history spanning over three decades, GI, situated in Braga and operating with 4,000m<sup>2</sup> of production lines, presents itself in the Portuguese market as a reference provider of solutions for shaping and processing flat glass. Its principal operation is based on cutting, drilling, notching, and edging the flat glass, mainly selling B2B and providing a variety of glass products, with a primary focus on isolation glass. The company aims to expand its operations internationally, overcome the saturated and tough competition in the local market and become more resilient and less dependent on a single geography. The company has a limited international presence due to sporadically engaging in indirect export activities. Consequently, this paper endeavours to evaluate the present and future status of the shaping and processing of the flat glass industry and appraise prospective foreign markets for GI's market entry. Subsequently, an adequate market entry strategy and a comprehensive marketing plan will be devised, complemented by a financial analysis and forecast to measure the project's potential outcomes and overall viability. After extensive research and analysis, the authors will present recommendations for the Internationalisation Plan and the corresponding go-to-market actions.

### **03. Research methods**

The research methodology employed in this report is comprehensive and multifaceted, combining primary and secondary data sources to ensure a robust analysis of the markets considered for expansion and their suitability for GI's entry strategy. The methodology involved a collaborative effort with academic guidance and close engagement with GI and the market.

Primary and secondary data sources were utilised to gather comprehensive insights. Primary data was collected through meetings held with GI, one of which involved an insightful visit to their factory, providing firsthand knowledge of their operations. Telephone calls were conducted with representatives from Dutch companies (VolkerWessels, De Groot & Visser) in the glass and construction industry. These interactions aimed to gain insights into the local market. This direct engagement with industry stakeholders added a qualitative dimension to the research, complementing the quantitative data from other sources.

Secondary data was drawn from reputable sources such as the World Bank, The World Economic Forum, OECD, ORBIS and other industry reports. This data served as a foundation for understanding market trends, consumer behaviour, and economic indicators, contributing to formulating a well-informed market entry strategy.

In summary, the research methods employed in this thesis encompassed a thorough blend of primary and secondary data sources, numerous meetings with academic and industry stakeholders, and the utilisation of datasets and communication channels. This approach ensured a holistic understanding of the international markets and facilitated the development of a well-informed and actionable market entry strategy for GI.

## **04. Firm overview and project background**

### **04.1. Company profile and management**

**“Great projects come from understanding customer needs.”**

GI is a second-generation family business dedicated to transforming glass that began its activity more than 30 years ago. Initially, the company was well-received in the market due to the quality of its services, innovation and speed of execution, and its main activity, at the time, was glass cutting, edging, frosting, and fitting. Nowadays, trading mainly B2B, the company aims to tailor its products to its customers' needs consistently and durably through a management system to meet requirements and continuously improve efficiency. Its activities focus on six aspects: Satisfaction, Quality, Motivation, Conditions, Revisions and Responsibility. As a result of the total transformation and evolution over the years, GI, now fully automated, has diversified its product range even further, adding other products such as double glazing with a complete assembly line, glass tops with different types of edges, laminated glass cutting and glass bending, among others.

### **04.2. Product/business portfolio**

The primary customers of GI are construction and glass installation companies. The company offers a wide range of glass products with different characteristics tailored to the client and the project's needs and purposes. Its products and services can be summarised as the following:

*Table 1 - GI product portfolio*

<b>Products</b>		
<b>Laminated Glass</b>	<b>Tempered Glass</b>	<b>Insulating Glass</b>
Made up of two or more panes of glass joined by one or more polyvinyl butyral's, colourless or tinted, which is why it is considered a safety glass that also filters out up to 99.6% of ultraviolet rays.	Heat-treated glass is much more resistant than standard glass, thus reducing breakage due to mechanical, bending, and thermal shock.	It consists of two or more panes of glass separated from each other by separating profiles, reducing thermal and acoustic emissivity in buildings.

*Table 2- GI services*

<b>Services</b>		
<b>Installation/Assembly</b>	<b>Technical assistance</b>	<b>Technical Consultancy</b>
Human Resources with extensive experience and state-of-the-art technical equipment in the assembly of glass and mirrors.	Provide replacement and maintenance service for parts, floor springs, and all the materials associated with a toughened glass installation.	Support in prescribing glass solutions for a wide variety of purposes.

### **04.3. Operations**

As previously stated, GI core operation is the shaping and processing of flat glass. As they do not produce the glass, the first step before starting the production process is to acquire it from its suppliers. After the first contact with the client, the company begins by planning the project and adapting its products to the client's needs. It begins by receiving the glass at its premises and starts the process, which is adapted to the client's preferences and objectives, ensuring that deadlines are met, and product quality is guaranteed in accordance with the specifications of the established contracts. The first stage of the process is cutting the glass, which can be normal or laminated. The cut glass can go to edge treatment (surfacing/seaming) and become a finished product ready for sale, or it can go to the third stage of tempering. This treatment is a thermally controlled hardening process to increase the strength of the glass and can generate a finished product. If not, it goes on to the last two phases, which correspond to the production of double glazing or insulated glass and the gas treatment, which prevents the oxidation of the tin in the glass and minimises its tin count (Company's information).

Besides the production process, GI can also be in charge of the distribution and assembly of the product at the project site. Finally, the company offers after-sales technical assistance and a replacement and maintenance service for parts and all materials. (Appendix [1](#)).

#### **04.3.1. Business Model Canvas**

The Business Model Canvas is a strategic management tool for visualising and assessing a business idea or concept. It can readily describe and explain how a business intends to generate revenue, focusing on the crucial strategic elements that drive growth. (Fisher, Wisneski, & Bakker, 2020)

The right side of the model focuses on the customer and the market (external factors that are not under control), while the left side of the canvas focuses on the business (internal factors that are mostly under control). The middle explores the value propositions, the central pillar around all the other elements representing the value exchange between the business and customers. A

clear, strong, and impactful value proposition is vital to the overall success of any business model. The Business Model consists of nine essential parts (Appendix 2):

**Customer segments:** GI tends to sell mainly B2B and supply mid- to large-size projects in the Portuguese market, mainly in the northern part of the country. Their primary customer and target group are construction companies and other companies specialising in installing windows and glass. Nevertheless, segments can be created considering their geographic position since the consumption preferences change significantly across the country, depending on solar exposure, temperature and purchasing power. For example, in Portugal, the most sought-after product is tempered double glazing, while in Spain, a neighbouring country, preferences are already shifting towards laminated double glazing. On the other hand, in Senegal, customers are mainly looking for simpler solutions since price is a considerable factor (CEO meeting).

**Value propositions:** The value proposition is why customers turn to one company over another, why they choose a product or service from that specific company and how the company solves the client's problem and satisfies its needs. GI undertakes to provide quality services and products with excellent value for money that meet and exceed customer requirements and expectations. They work with clients to realise projects and supply high-quality products, guaranteed through a management system per ISO 9001:2015. They are known for their unwavering commitment to honouring the agreed terms and the involvement, motivation, and competence of all the company's employees and certified suppliers.

*Figure 1- Value proposition (Company's website)*



**Channels:** Companies can use various channels to deliver their value proposition and include all the different platforms to sell their products. From these channels, customers can communicate with a business and evaluate and study the company's value proposition. Since they prefer to sell B2B, they mainly use offline channels to promote and sell their products.

Their four active sales agents primarily do this; two visit customers in different regions and establish contacts with potential clients, and the other two are present in Braga's office (CEO meeting). Sporadically, the company also participates in conferences and industry fairs. Besides that, it is essential to highlight that the company gets a lot of new clients through word-of-mouth referrals from previous customers. Additionally, GI uses online channels, namely social networks (Facebook, Instagram, and LinkedIn) and the company's website, where they tend to make weekly posts. This task is subcontracted to a marketing agency.

**Customer Relationship:** GI mainly establishes relationships with their customers in two ways: outbound and inbound. The company's four sales agents are responsible for the outbound, reaching and visiting new and current customers regularly across several regions and taking advantage of these visits to take note of new orders and strengthen the relationship with the customers. GI also has salespeople in their offices who take care of the inbound, answering clients' requests by phone and email. GI professionals' assistance can be divided into sales support and after-sales support. Sales support includes guidance, technical advice, budgeting, and work planning. They also ensure that deadlines are met, and the quality of the products is guaranteed by the specifications of the contracts established to achieve customer satisfaction to build customer loyalty. The after-sales support includes requesting customer feedback, the warranty, and dealing with possible complaints.

**Revenue Streams:** Revenue streams encompass all sources of income from which an organisation generates revenue by selling goods, providing services, or both. These revenue sources can vary in nature, either recurring (e.g., subscription) or transaction-based (e.g., sale). Diverse revenue streams enable businesses to cater to different customer segments. GI revenue is transaction-based and comes entirely from selling goods (double-glazing, tempered glass and others). They currently only sell directly in Portugal since the projects they support overseas result from indirect exports. Therefore, the GI revenue stream is not well diversified.

**Key Resources:** To deliver GI's value proposition, reach customer segments and operate efficiently, the company's key resources can be divided into Human Resources, 42 competent employees that guarantee product quality and optimise resources; Physical Resources represented by the factory, with 4,000 m<sup>2</sup>, and machinery, that can satisfy customer needs and produce larger glass panes more effectively; And, finally, Intellectual Resources that correspond to the registered brand name GI and their image known for the commitment and quality of its products and services.

**Key Activities:** The key activities should focus on fulfilling the company's value proposition, reaching customer segments, maintaining customer relationships and generating revenue. In GI, these activities are composed of the glass processing services that the company can offer, which can start with the processes of cutting, drilling, notching, edging, and tempering the glasses. After that, the technical assistance during the project for parts replacement and maintenance service, and the technical consultancy support in prescribing glass solutions for a wide variety of purposes and needs. Finally, periodic reviews and management system audits verify and evaluate compliance with established objectives, targets, and programs.

**Key Partnerships:** Key partners are the external companies or suppliers that will help the company carry out its key activities. They can be divided into different types: strategic alliance, coopetition, joint ventures, and buyer-supplier relationships. Regarding partnerships, the company is heavily dependent on two suppliers because of the scarcity of suppliers in this market. Saint-Gobain and Guardian Glass are their biggest suppliers, representing 98% of their raw materials supplies.

**Cost Structure:** The Cost Structure details the monetary cost of business operations. It represents all the costs, variable or fixed, a business will incur under a specific business model, especially those who maintain the key resources that make up the core business model. This concept helps to guide how you target innovation and value proposition development. By

understanding cost structures, you can aim to reduce costs and make the most from every cost your business incurs. The company's most significant expenses are suppliers' payments, usually made within 60 days, salaries representing 21% of the total costs, and interests paid on existing bank loans amounting to €30,928 (Appendix [2](#)).

#### **04.4. Positioning**

The strategic direction refers to the plans and actions necessary to achieve an organisation's future vision. Therefore, to define a company's direction, we must first understand its mission, values, and vision for the future. Only after defining and analysing these concepts can we set a strategic direction, develop a plan, and set specific targets and goals for the organisation.

A company's mission, vision, and strategy are interconnected and can be visualised as a funnel. In the broadest part, we find the mission statement; towards the narrower part, we have the vision statement, which will set a direction for the future and help the development of the strategy. In the narrowest part, we have the strategy, which clearly states what the firm will and will not do to achieve its vision. After having a solid understanding of these concepts, the company's strategic direction can be designed. Develop a plan, identifying the future direction and including the stakeholders. All parts of the organisation must understand where the company is heading, its purpose, and its specific roles.

The final step is to define periodic and quantifiable goals that will help the company evaluate the success of the intended strategic plan. The long-term goals should align with the overall direction and help achieve its mission and vision. However, the company also needs to define short and medium-term measurable goals that will set smaller milestones, which will be important to reach the desired destination.

#### **04.4.1. Vision / Mission**

Vision and Mission Statements are typically communicated in the organisation's written form and are used internally and externally. These two concepts are not independent and help the organisation answer questions about who they are, what they do and where they are going. Internally, these concepts guide management's thinking on strategic issues, especially during times of change or struggle and help define performance standards. They also may help employees' motivation, productivity and decision-making by providing purpose, ethical standards and common goals. Externally, they act as a form of communication and help create stronger connections between the company and its customers, suppliers and other partners. It can also be helpful as a public relations tool (Jose Albors-Garrigos, 2014).

A **mission statement** concisely explains an organisation's reason for existence and describes its purpose, business, who it serves and overall objectives. The mission statement supports the vision and communicates purpose and direction to employees, customers and other stakeholders. Mission statements are often longer than vision statements.

GI's Mission statement is: "To provide high-quality services and products with great value for money, satisfying and exceeding customer requirements and expectations. To instil a culture of resource optimisation and stimulate continuous improvement among all company employees, guaranteeing credibility to retain its current customers and win over new ones."

A **vision statement** describes the company's desired future growth, state and impact on the world. In contrast with the mission statement, the vision statement is a future-oriented declaration of the organisation's purpose and aspirations. The mission statement lays out the organisation's purpose and reason for existence, and the vision statement states what the company wants to become based on that purpose. The strategy should flow directly from the vision since the strategy is intended to achieve the vision and thus satisfy the organisation's mission. A compelling vision inspires the team, showing them how success will look and feel.

GI's vision statement is: “To be recognised nationally and internationally as a leading company in the market in which it operates, standing out for the excellence of the products and services it provides and for its focus on employee satisfaction and professional development, generating the right return for its partners”.

#### **04.4.2. Positioning and Values**

In pursuing internationalisation, a crucial aspect for any company is establishing a clear direction that guides its strategic decisions, actions, and overall approach to global expansion. Defining a company's current positioning and values is crucial for its success in the domestic market and internationalisation. Positioning and values are the foundation upon which the company builds its global presence and reputation, shaping its identity and influencing its relationships with stakeholders beyond domestic borders.

Strategic positioning is all about where a company is placed in the market. It's how a business distinguishes itself from its competitors and how the target audience perceives it compared to other companies in the industry. By understanding its position, a business can make better and more informed strategic decisions that will help it succeed. When expanding globally, companies must consider several key elements of positioning: Market segmentation, competitive analysis, value proposition, branding and pricing, among others (Jose Albers-Garrigos, 2014).

When paving the way for international expansion, companies often turn to Michael Porter's Generic Strategies as a framework to guide their approach. These strategies offer a valuable perspective on how companies can reach sustainable competitive advantage, which, according to the author, is how companies can achieve and sustain long-term results and profitability that exceed the industry average.

According to Porter, there are two basic types of **competitive advantage**: when the firm can deliver the same benefits as competitors but at a lower cost (cost advantage) or deliver benefits that exceed those of competing products (differentiation advantage). Thus, a competitive

advantage enables the firm to create superior value for its customers and outstanding profits. Competitive advantages need to be unique to your organisation or hard to replicate, must deliver value to its customers, and can have a narrow or broader scope. This resulted in three generic strategies: cost leadership, differentiation, and focus.

In **cost leadership**, a firm sets out to become the low-cost producer in its industry. Thus, it must find and exploit all sources of cost advantage. Suppose a company can maintain a competitive advantage in terms of overall cost. In that case, it will outperform its industry peers if it can charge prices comparable to the industry average. Companies that are usually successful in pursuing this strategy have proprietary technology, preferential access to raw materials, or have achieved economies of scale.

In a **differentiation strategy**, a firm seeks to be unique in its industry along some dimensions that buyers widely value. It selects one or more attributes that many buyers in an industry perceive as essential and uniquely positions itself to meet those needs. It is rewarded for its uniqueness with a premium price. To pursue a successful differentiation strategy, organisations need a good capacity to develop and innovate, the ability to deliver high-quality products and effective sales and marketing communication so that the markets understand the additional benefits the company offers.

**Focus** strategies are concentrated on particular niche markets and, by understanding the dynamics of that market and the unique needs of customers within it, develop uniquely low-cost or well-specified products for the market. Additionally, they uniquely serve customers in their market, creating strong brand loyalty and making this market segment less attractive to competitors.

Figure 2 – Porter’s Generic Competitive Strategies



A company that tries to engage in each generic strategy but fails to achieve any of them is considered ‘**stuck in the middle**’. Such a company has no competitive advantage, regardless of its industry. Such a company will compete at a disadvantage because the ‘cost leader’, the ‘differentiators’ and the ‘focusers’ in the industry will be better positioned to compete. Nonetheless, a company stuck in the middle can still earn attractive profits simply because it operates in a highly attractive industry or because its competitors are also stuck in the middle. Additionally, a company could be in the middle because it follows an integrated differentiation and cost leadership competitive strategy, which is seen as more efficient in its operations than a firm that has incorporated only one business-level strategy (Hoskisson, Hitt, & Ireland, 2009, p. 149). However, it is tough for the company to engage in differentiation and cost leadership, especially for companies with limited financial resources, because differentiation is usually costly (Porter M. E., *Competitive Strategy*, 1980).

After considering everything, GI appears to be facing the challenge of being stuck in the middle of its industry and operating in a niche market in the local market. The glass transformation and shaping sector is generally characterised as a low additional value industry. This results in little to no differentiation in the transformation process, which remains standardised across different markets. In addition, the authors’ competitive analysis of the industry reveals that GI faces fierce competition from more prominent players in the domestic and international markets, which possess not only a more substantial financial power to invest in new and more modern machinery but also have ease in achieving economies of scale due to their size but also have a

more substantial supplier bargaining power. Given the intrinsic nature of this industry and GI's capabilities and resources, we currently perceive that it is difficult for this company to achieve a sustainable competitive advantage in the short term.

Nonetheless, the fact that GI is stuck in the middle of the Portuguese market doesn't necessarily mean that the company cannot be competitive internationally. Consequently, to be successful, GI needs to analyse its internal capabilities and the market in which it is inserted and, with its future goals in mind, make a strategic decision of which path to follow to obtain a competitive advantage. As previously stated, the glass shaping and processing industry is notable for its standardised production processes, resulting in a lack of differentiation across several markets. However, this industry characteristic opens a window of opportunity to **pursue cost leadership**. Portugal plays a pivotal role in this strategy since the nation possesses relatively lower labour and energy costs when compared to other European Countries. This is further addressed in section 5.3. Additionally, GI must invest to try to **improve efficiency and reduce costs**. Lean manufacturing principles should be adopted, and a thorough analysis of the internal process should be conducted to eliminate waste and reduce inefficiencies. Each station of the production process should be analysed and placed to reduce lead times and bottlenecks. Another essential factor to improve is the amount of glass wasted in cutting each glass sheet, which highly affects costs.

With the internationalisation plan, production is expected to increase, which will be crucial for the company to achieve **Economies of Scale**. The company is already undertaking the construction of a new factory, also in Braga, and has planned the purchase of several new equipments, such as a new oven to produce tempered glass, thus tackling a current issue, which is that the company is already operating near to 100% of its capacity. The new facility will replace the old one and is estimated to have 2.5x the current capacity. This excess capacity will be crucial for the company to accommodate the forecasted international sales. This will ensure

that GI reduces its costs per unit and ultimately reinforces its competitiveness in the domestic and international markets. Consequently, the increase in production will increase the purchases from suppliers, which could be essential to increase GI's purchasing power, which is currently low (further assessed in section 4.5. Financial Overview).

Cost leadership enables GI to offer competitive pricing and, therefore, to appear as an attractive and financially prudent choice. In markets where glass production costs are notably higher, GI's cost advantage is a springboard for effective market penetration, thereby increasing market share. Additionally, this competitive advantage is also helpful in making the company more resilient since it allows GI to withstand market fluctuations and economic downturns better. A commitment to cost leadership enhances the company's stability and long-term viability. Even though a Cost Leadership strategy promises substantial benefits, it is essential to acknowledge its potential challenges and risks, the biggest being the erosion of quality. A narrow focus on reducing costs might compromise the product's quality, which is something GI needs to be cautious and balanced to avoid losing its reputation.

In **conclusion**, GI's strategic shift towards implementing a Cost Leadership strategy is a well-founded decision that promises to provide a distinct competitive advantage in internationalisation. By capitalising on Portugal's cost advantages and effectively implementing strategies for cost reduction, the company is poised to offer competitive pricing, penetrate new markets, and mitigate risks. Nonetheless, challenges and risks still exist. GI will have to maintain an unwavering commitment and implement robust cost monitoring systems capable of swiftly identifying and mitigating cost escalations to maintain this competitive edge. Furthermore, the pursuit of continuous cost-reduction initiatives in areas such as energy consumption, logistics, and labour are essential, as well as exploring the opportunity to outsource secondary activities where the firm is inefficient (further addressed in section 6.1. Value Chain).

**Values:** Additionally, to be successful in the pursuit of an internationalisation strategy, a company should look beyond cost leadership and differentiation and needs to account for the importance of other factors such as Values, Adherence to local laws, Respect for diversity, Social responsibility and Sustainability and lastly Brand credibility (Appendix [3](#)).

#### **04.5. Financial Overview**

GI's financial situation was analysed using the official data provided by the company, which is comprised of the Balance Sheet (BS) and the Profit & Losses Statement (P&L) of the past five years (2018-2022). The firm's financial strength was also further examined by performing a profitability, efficiency (Cash flow management) and liquidity analysis.

Overall, the firm had a positive trajectory in the past five years. In the examined period, the company grew its **revenues** yearly, from €3,4M in 2018 to €5,1M in 2022, representing an impressive 52.04% increase. Despite this, the firm's **Gross Margin** decreased slightly (from 44% to 41.5% in the respective period) due to a relative increase in COGS. The evolution of the **EBITDA Margin** wasn't constant. Nonetheless, it had an overall positive progression, increasing from 2.3pp in 2018 to 11.6% in 2022. The main drivers of this change were the relative decrease in External Suppliers and Services, from 11.27% to 10%, and the cost of employees, which decreased from 22.67% to 18.51%, in percentage of revenues and from 2018 to 2022, respectively. Additionally, depreciation and amortisation also reduced the percentage of sales, improving the EBIT margin. The overall consequence of the analysed changes was an impressive increase in **Profit Margin** from 0.91% to 3.93%, which in absolute terms reflects an increase of more than €170,000 (Appendix [4](#) & [5](#)).

Regarding the **Balance Sheet**, we can observe that the Total Assets increased by 50% from almost €3M in 2018 to €4.5M in 2022. This change is mainly driven by a significant increase in the Current Assets, both due to an increase in the Receivables from €1.2M to €2M (which grew more than revenues, thus suggesting an increase in the average collections period), between 2018 and 2022, and Cash and Cash Equivalents from €82k to €668k in the same period.

The increase in this last component is explained by the company receiving a €800k loan in 2020, which is also reflected in long-term debt, which increased by a similar amount (a 60% increase). The loan was partially taken to improve the company's financial strength and finance the ongoing factory expansion. This also impacts the non-current liabilities, which grew by 1.25M due to the already mentioned new loan and a significant increase in provisions from €140K to €464K. Equity increased by 60.2% in the analysed period (due to the accumulated retained earnings from previous periods). Since the increase in Equity was higher than in Liabilities (46.62%), the **D/E ratio** decreased from 3,03 in 2018 to 2,77 in 2022, which is viewed as positive (Appendix [4](#)).

Regarding the **company's cash flow management**, we can start by analysing the **average collection period** (ACP), which measures the time it takes for a company to collect its accounts receivable from its customers. The company registered an abnormally high collection period in the analysed period that has worsened in recent years. It started at 130 days in 2018 and significantly increased in 2020, probably impacted by the clients' financial distress under the COVID-19 pandemic, which was kept until 2022 at an average of 146 days. The **Average Holding Period** (AHP) measures the time it takes for a company to sell its inventory. From 2018 to 2021, we can observe that the company had stable values averaging 32 days. However, this value dropped significantly in 2022 to only 16 days. This positive change is explained by a significant increase in sales in 2022 (26.5%) and a significant inventory reduction (45.9% decrease). The **Average Payment Period** (APP) measures the time it takes for a company to pay its suppliers. In this parameter, GI significantly decreased this figure in the past five years, from 112 days in 2018 to only 54 days in 2022, which is seen as unfavourable.

The **Cash Conversion Cycle** (CCC) measures the time it takes for a company to convert its investments in inventory and other resources into cash flows from sales:  $CCC = AHP + ACP - APP$ . A negative CCC means that the company can generate cash flows from its operations

before paying its suppliers and creditors, thus effectively using its suppliers to finance its operations, which is the desired scenario, and a positive CCC means that the firm has to fund its operations through external sources. In the analysed period, GI always had a positive CCC, and this value increased significantly from 49 days in 2018 to 107 days in 2022, which is a bad sign. In the industry in which the company operates, there are few suppliers, and they have considerable power, which explains why the APP is lower than the ACP. However, the difference between these two parameters has increased even more in recent years, highlighting GI's weak bargaining power regarding its buyers and suppliers (Appendix 6). This cash flow management analysis reveals one of the main weaknesses of the firm. Therefore, the author recommends that the company put much effort into improving and renegotiating the contract with its customers (decreasing the collection period) and suppliers (increasing the payable period).

Lastly, it is essential to assess the company's **liquidity position**. To do so, we can start by examining the evolution of the **current ratio**, which measures a company's ability to pay its short-term obligations or those due within one year. GI's current ratio has been historically over one and had a significant positive change from 1.95 to 5.35 between 2018 and 2022, respectively, explained by a higher increase in current assets than in current liabilities, already explained in the previous analysis. These values indicate that the company has maintained a healthy liquidity position and is well-equipped to meet its short-term obligations, such as paying off short-term debt and purchasing inventory. The **quick ratio** is particularly relevant for companies with high inventory turnover or with goods that are typically harder to sell under distress periods and measures the firm's ability to meet its short-term obligations without relying on the value of its inventory. GI's quick ratio is close to the current ratio because it lacks vast inventory. Also, similar to the previous ratio, it follows a similar positive progression and shows strong liquidity signs, totalling 5.11 in 2022. The **cash ratio** is a more conservative

liquidity measure than the current or quick ratios, as it only considers a company's cash and cash equivalents to meet its short-term obligations. GI cash ratio was meagre in 2018 and 2019, equalling 0.11 and 0.28, respectively. Then, from 2020 forward, we can observe a significant improvement in this ratio, ranging between 1.81 in that year and 1.23 in 2022. This positive change is explained by the loan contracted in 2020, which will be used over the following years to finance the construction of the new factory in Braga. Moreover, the **Net working capital (NWC)** is an important liquidity measure representing the difference between a company's current assets and liabilities. Over the last five years, GI has maintained a positive NWC that has been growing from €710K in 2018 to €2.4M in 2022 (Appendix [7](#)), which in part is explained by the increase in sales but also needed due to the deterioration of the Cash Conversion Cycle, thus increasing the need of available cash to finance operations.

**Overall**, the company has been improving significantly over the years. Its revenues increased by 52.04% from 2018 to 2022, and it has also improved its margins, which resulted in a positive impact on profitability. Regarding its Balance Sheet, the company seems to have a high D/E ratio, which may be costly and risky. However, this ratio has been decreasing over the years. The company's cash conversion cycle has been positive and growing, which is a negative sign and should be tackled by the company in the near future. Lastly, the firm's liquidity ratios demonstrate a robust liquidity position that has improved over the years; however, if the company had not contracted a new loan, its cash ratio would be significantly low.

## **05. External analysis – Macro-Environment / Industry / Market**

This section will address a comprehensive external analysis, starting with a PESTEL analysis to evaluate the macro-environmental factors affecting the industry in which GI is operating. The analysis is followed by an overview of the trends in the global industry to gain insights into its current state and prospects and a Porter's Five Forces framework to delve deeper into the industry's competitive forces. Afterwards, the competitive landscape will be examined, and key players will be identified. Lastly, the competitiveness of the Portuguese processing and shaping glass industry will be evaluated.

### **05.1. Macro-Environment PESTEL-analysis**

The PESTEL analysis is used to identify the macro-environmental factors that can impact an organisation. It can offer valuable insights into external factors that affect a business.

**Political factors:** GI is based in Portugal, bordered to the west and south by the Atlantic Ocean and to the north and east by Spain. A neighbour-friendly country that, together with Portugal, are members of the European Union, Eurozone, Schengen Area, NATO, and many other institutions. As part of the EU, Portugal benefits from the EU's extensive network of trade agreements with countries worldwide. Portugal is also a member of the Community of Portuguese Language Countries (CPLC), whose mission is to foster cultural and facilitate trade and political cooperation between the Lusophone countries of the world. Agreements like the EU and CPLC are essential for Portuguese businesses as they make it easier to trade globally and access markets that might be more challenging to enter independently.

**Economic factors:** EU membership provides the Portuguese economy with significant advantages. Portuguese companies have access to a single market with over 450 million consumers and can export their products and services to other EU member states without facing tariffs or trade barriers. Being part of the Eurozone and using the euro as its currency offers currency stability and eliminates exchange rate risk when trading with other eurozone countries. In addition, in 2020, the EU launched a NextGenerationEU program designed to boost the

recovery of European economies post-COVID-19. One of the main elements of the package is fighting climate change, with 30% of the EU funds targeted to this cause (Jose Albers-Garrigos, 2014). Financial incentives exist to finance renovation projects promoting building energy optimisation in Portugal and other EU countries. For example, the Support Program for More Sustainable Buildings in Portugal is part of the Energy Efficiency in Residential Buildings under the Commission of Recovery and Resilience Facility (RRF). This program has a substantial allocation of €100 million (Government P. , 2023). The Portuguese economy has experienced a robust recovery following the effects of the COVID-19 pandemic; real GDP growth was at an impressive 6.8%. However, although public debt as % of GDP has fallen below 2019, Portugal's debt in absolute terms is still rising, which may raise fiscal pressure due to a rise in interest rates. To ensure a lasting recovery, Portugal must execute the ambitious RRF. With the implementation of the RRF, real GDP growth is projected to reach 2.5% in 2023 and 1.5% in 2024 (OECD, Portugal Economic Snapshot, 2023). The production of the construction sector of the Portuguese economy is expected to increase by 3.4% in 2023, with the building construction segment growing by 2.0%. This benefits the glass industry as various glass products are used in residential construction. Forecasts indicate a positive but more moderate growth of +3.0% in 2023 in residential construction production, the lowest growth rate in the past eight years. This slowdown is attributed to expected increases in interest rates and material costs throughout the year (FIEC, 2022).

**Social factors:** Portugal has a population of roughly 10 million, of which 67.9% live in cities and are primarily concentrated along or near the Atlantic coast. The level of education is high, with a school life expectancy of 17 years, which is higher than the EU average, and a literacy rate of 95.9% of the population. The median age is 44.6 years old, ranking 13<sup>th</sup> in the world, which indicates that Portugal is one of the oldest nations. This is putting pressure on population growth and, therefore, the workforce. The population growth in 2023 was negative, at 0.17%.

The current labour force of 5.1 million is expected to decline over the coming years (CIA, 2023). Portugal's living standards are below the EU average, with a disposable income of €19,306 in 2021, compared to the average of €24,192 in the European Union (EuroStat, Living conditions in Europe, 2022). The lower living standards also impact the Portuguese's minimum wage, the lowest in Western Europe (EuroStat, Data on minimum wages in the EU, 2022). One of the biggest concerns of the Portuguese and European public is climate change. These are the results of the EU's survey on climate change in all EU member countries. A significant share of the respondents from Portugal, 89%, consider climate change a severe problem. This is significantly more than the EU average of 77%. In Portugal, 11% of households have insulated glass (lower than the EU average of 17%), which is considered better for reducing energy consumption, and 27% of the respondents in PT (versus 36% in the EU) think that the EU and its member states should invest more in energy efficiency measures (e.g., improved insulation) (Eurobarometer, 2023).

**Technological factors:** Innovation in the European glass manufacturing industry has resulted in improved energy savings and environmental protection, a switch from fossil to non-fossil energy, which makes the sector future-proof. Significant innovations in glass have been made for construction purposes. Low-emissivity (Low-E) coatings can be applied to the surface of the glass. The coating reflects heat into a building while allowing natural light to enter. Another innovation in glass technology is the development of self-cleaning glass. This type of glass has a special coating that causes dirt and grime to break down when exposed to sunlight or wash away when it rains. Smart Glass is a type of glass coated with a specially designed layer. With smart glass, you can control the transparency and reflectivity of the façade. It can also help regulate the temperature and lighting in a building, reducing energy costs and increasing comfort for its occupants (Miglass, 2023).

**Environmental factors:** This section looks at how the environment conditions businesses and how the activities of companies and the economy impact the environment. Droughts are common in Portugal, especially during summers when high temperatures exacerbate them. Consequently, this affects various industries (mainly agriculture) and the availability of (drinking) water. Companies operating in Portugal are especially at risk of forest fires, heat waves, and, to a lesser extent, earthquakes, tsunamis, droughts, windstorms, dam breaks, radiological emergencies, and floods (EC, 2022). Portugal derives one-third (in 2021) of their domestic energy from renewable sources, ranking 7<sup>th</sup> in the EU (EEA, 2023) and giving Portugal a competitive advantage over other countries as prices for fossil fuels continue to rise.

**Legal factors:** Portugal's antitrust regulations align with EU competition law, and the country has national competition laws to prevent anti-competitive behaviour. The Competition Authority is responsible for enforcing competition law, preventing anti-competitive practices, and promoting competition in various sectors of the economy. Portugal adheres to EU trade policies and regulations as an EU member state. Trade between Portugal and other EU members is generally free from customs duties and tariffs. The EU also has trade agreements with other countries outside the EU, such as countries within the European Economic Area and worldwide. Resident companies in Portugal are taxed on their worldwide income. The flat corporate income tax (CIT) rate is 21% (PWC, taxes on corporate income, 2023). Portugal's maximum statutory corporate tax rate is 31.5%, the second highest in the EU after Malta. However, this tax rate only applies to companies with a profit of over 35 million.

**Conclusion:** The PESTEL analysis highlights several opportunities & challenges for a business operating in the Portuguese glass market. Portugal's EU membership gives many advantages, and EU funds help Portugal and EU countries boost their economy and help incentivise people to make their homes more energy efficient. The nation is also a member of the CPLP and other international institutions that make it easier for Portuguese businesses, including GI, to trade

globally. Portugal's having the lowest minimum wage in the west of the EU can make products produced in Portugal more competitive when compared to other Western European nations. Portugal's reliance on renewable energy sources aligns with sustainability trends, which may be attractive to eco-conscious customers. Innovation in the European glass manufacturing industry can provide GI with opportunities to offer innovative-sustainable products. However, keeping on track with technological advances in the industry may require substantial R&D or capital investments. Inflation and a fragile global economic environment can impact economic growth, affecting business operations. The country also faces rising fiscal pressures, affecting the overall business environment. In addition, the ageing population and negative population growth can result in a declining workforce, potentially leading to labour shortages.

### **05.2. Industry competition, trends, and success factors**

In this section, the industry's landscape will be addressed by analysing growth trends that GI can leverage on both a global and local scale. In addition, we will apply Porter's Five Forces (P5F) framework to help understand the competitive forces at play within the industry. It offers a structured analysis of the industry's competitive dynamics. Lastly, we will delve into the Key Industry Success Factors derived from the competitive forces.

**05.2.1 Consumer Trends and Forecast:** It is relevant to identify trends in the market to determine if GI's operations can benefit from them. Firstly, trends regarding GI's suppliers will be assessed, followed by the global, European and domestic market industry trends. The worldwide flat glass market will grow at a compounded annual growth rate (CAGR) of 5.28% over 2023–2028 and is very concentrated, Appendix [8](#). The increasing use of glass architecture in construction is expected to be the main driver of growth over the forecast period (Research G. V., Global flat glass market, 2022). The forecasted increase in glass architecture is beneficial for GI. The global market size for insulating glass is anticipated to grow by a CAGR of 6.9% from 2021 to 2030 (Amar C, 2021), driven by increased sustainability awareness in response to climate change and the improved efficiency it provides, allowing for energy consumption

reductions. Governments in many countries, especially in the EU, provide subsidies for these initiatives that promote improved energy efficiency, thereby fostering demand for insulating glass. The global market for tempered glass is expected to grow by a CAGR of 7.1% from 2021 to 2030 (Nikhil M, 2022). The main driver for this growth is the flourishing construction sector. This industry is experiencing rapid expansion in developed and developing economies. Asia-Pacific is the most significant development driver, with a 61.6% market share in 2021, Appendix 9 and the fastest-growing market, Appendix 10. Although less, the European flat glass market is also anticipated to expand significantly between 2022 and 2027, with a predicted CAGR of over 3%. It also possesses a high market concentration, Appendix 11. Germany is expected to dominate the European market during this period, Appendix 12. The minor Portuguese shaping and processing of flat glass industry is projected to reach \$464M by 2025, Appendix 13, a CAGR of 3.8% increase from 2022 (Statista, Industry revenue in Portugal 2012-2025, 2021). They expect that the industry revenue for the manufacture of flat glass in Portugal will also rise, according to Statista, Appendix 14, with a significant CAGR of 15% between 2022 and 2025.

**05.2.2 Porter's Five Forces (P5F):** Understanding the industry's competitive forces is essential to creating a successful strategy to achieve international growth. The P5F framework provides a structured approach to assessing the competitive dynamics of an industry. The following sections describe the five forces and their subsequent impact on companies.

**Threat of New Entrants:** Factors such as high capital investment needs, brand loyalty and specialised knowledge impact the ease with which new entrants can enter the market. Operating in the shaping and processing of the glass industry requires significant capital investment in facilities and machines. The production process can be energy-intensive when tempered glass is considered, causing companies in this industry to have high set-up costs. The industry also demands specialised knowledge and expertise. Additionally, the market is saturated, making

existing relationships with suppliers and customers important. These factors result in a high entry barrier, which makes the threat of new entrants **low**.

**Bargaining Power of Suppliers:** Few available suppliers in an industry usually mean they possess more leverage, which can even be higher if they provide unique products. In addition, high switching costs can also increase suppliers' power. GI primarily sources its glass from two major manufacturers, Saint-Gobain and Guardian Glass, which hold substantial market dominance. Given GI's relatively modest purchase volumes, it finds itself in a position where it depends heavily on these industry giants, resulting in significant leverage for its suppliers. These manufacturers also have specific products, increasing suppliers' bargaining power. However, the cost of switching from GI to the supplier is low. This all together gives a **high** bargaining power for suppliers.

**Bargaining Power of Buyers:** A small number of large buyers in an industry have more bargaining power. If products are undifferentiated or easily substitutable, buyers have more power. Pricing, product quality, and service levels can further decrease the buyer's bargaining power. Generally, the buyers of GI are medium-sized subcontractors to the larger principal contractors. They can often have some bargaining power due to the availability of many alternative suppliers that typically offer the same product. The bargaining power of buyers is **high to moderate**, as GI does not have specialised or unique products. Still, its customers are mainly close to its facilities, which helps establish a solid relationship with its customers, increasing its bargaining power.

**Threat of Substitutes:** More substitute products mean a higher threat. If substitutes offer a similar or better price-performance ratio, it increases the danger. There are alternatives to the products provided by GI (tempered and insulated glass). However, they usually do not meet the same quality or performance standards. For example, acrylic or plexiglass can be used but does

not meet tempered or insulated glass's insulation or safety performance requirements. This makes the threat of substitutes **low**.

**Competitive Rivalry:** A significant number of competitors often leads to more intense rivalry. In addition, slow market growth and high exit barriers, like significant asset investments, can lead to more intense rivalry as companies may continue to compete even in challenging conditions. Competitive rivalry is **high and fierce**. Many other well-established producers are in the market, and differentiation is low. The market has a slow growth rate, and exit barriers are high due to significant investments in facilities.

**05.2.3 Competition in the domestic market:** Competition is intense in GI's industry, with limited opportunities for setting themselves apart from rivals. Client choices are mainly driven by pricing, product quality, and service standards. Larger companies can capitalise on economies of scale to their advantage. In the domestic market, GI ranks 18th in annual turnover, achieving €5.1 million, see Appendix [15](#). Comparatively, the largest company in the Portuguese market has a turnover of €26.5 million. On the international stage, companies tend to be larger. To break into the top 10 companies in neighbouring markets like Spain, France, Italy, and Germany, a minimum turnover of €20 million is required. The European glass market is dominated by Saint-Gobain, which generally owns one of the top 10 companies in each European market. Back in the Portuguese market, laminated, tempered, insulated and double glass are the most common types of glass, Appendix [16](#). GI has all of these types in its assortment. However, an apparent discrepancy can be perceived between GI and the other companies in terms of the size provided. With all the data available on the top 20 national firms' websites, the authors obtained a reduced sample of the maximum measurements, Appendix [17](#). It can be concluded that the other companies can produce more extensive measurements than GI. However, this can be improved with the new facility under construction. Section 7 of the report will further investigate the difference between GI and the competition.

**05.2.4 Key Industry Success Factors:** To conclude, a company's success operating in the glass industry depends on multiple factors. The industry's competitiveness makes efficient production processes vital for maintaining profitability. Building solid relationships with customers and manufacturers can lead to customer loyalty and valuable referrals. Offering a diverse range and size of glass products is a strategic move that can expand a company's market reach. This may include products such as energy-efficient glass and smart glass. In addition, implementing sustainable manufacturing practices, such as recycled glass and reducing energy consumption, can also appeal to a growing number of environmentally conscious customers or clients and help companies comply with future regulations. Embracing innovative glass manufacturing technologies can help to differentiate and stay competitive.

### **05.3. Country-specific advantages (CSA) (Porter's Diamond)**

Porter's diamond helps analyse a nation's competitive advantage in a particular industry. The model comprises four interrelated factors that influence a country's competitive advantage.

**Firm Strategy, Structure, and Rivalry:** Competition within an industry leads to increased production and the development of technological innovations. The concentration of market power, degree of competition, and ability of rival firms to enter a nation's market influence this factor. In Portugal, the market is mature, showing high rivalry, which encourages businesses to innovate and to be more efficient. However, GI does not have significant market power and has limited opportunities to innovate and set itself apart from the competition. Therefore, the advantage in Portugal is considered **medium**.

**Related and Supporting Industries:** The presence of solid and competitive upstream industries, such as suppliers of raw materials, and downstream sectors, such as the construction industry, can enhance the competitiveness of a country. Portugal, however, doesn't have a big flat glass production industry to supply its shaping and processing of glass industry. Flat glass manufacturing in Portugal is valued at only €5.0m and is ranked 12th in Europe in 2023 (of 17 total EU countries). The industry is the 289th largest industry in Portugal in 2023 (of 294 total

industries that IBISWorld tracks) (IBIS, 2023). Therefore, the advantage in Portugal is considered **low**.

**Factor Conditions:** Portugal benefits from trade agreements that ease imports and exports with other member countries as a member of the EU. Additionally, its proximity to the Atlantic Ocean contributes to efficient transportation. Portugal offers skilled labour at a comparatively low cost as the minimum wage is relatively low (€760 in 2023) (Portugal, 2023), especially compared to other European nations. The Euro Zone estimated hourly labour costs are €34.3, which is 113% more than Portugal's €16.1 (Eurostat, 2022). Additionally, in the 2<sup>nd</sup> half of 2022, the Euro Zone average electricity price (for non-households) was 58% higher than in Portugal (Eurostat, 2022). These figures represent a stark contrast which can be capitalised to establish a competitive edge, and therefore, Portugal's advantage is considered **high**.

**Demand Conditions:** The strength of the domestic market for glass products in Portugal will influence the industry's competitiveness. Predictions indicate that Industry Revenue in Portugal is projected to have an annual growth rate of 3.70%. In comparison, the Industry Revenue in Spain is only projected to grow at 0.02% a year. This indicates a strong growth of demand in Portugal. Therefore, the advantage in Portugal is considered **high**.

**Conclusion CSA:** In conclusion, assessing the case of Portugal reveals a mixed scenario. Competition in the industry and GI's position contribute to a medium advantage. The absence of a robust flat glass production industry further lowers the overall competitiveness. However, Portugal's factor conditions, including EU membership, efficient transportation, and a cost-competitive skilled labour force, present a significant advantage, categorised as high. Demand conditions in Portugal, characterised by a robust domestic market and strong growth projections, contribute to a high advantage. Despite facing challenges in specific dimensions, Portugal's glass industry benefits from a strategic geographic location, cost-effective labour, and a thriving domestic market, positioning it competitively internationally.

## **06. Firm-Specific Advantages (FSA)**

Firm-specific advantages (FSA) are the distinctive strengths, capabilities and resources that distinguish a company from its competitors in the dynamic business landscape. The following analyses are interconnected concepts that comprehensively understand a company's competitive position and sustainable competitive advantage.

### **06.1. Resources and competences (Value Chain)**

A value chain is a series of activities companies conduct to deliver a product to customers. This tool is a strategic process for evaluating the company's internal workings and identifying how each stage contributes to the company's competitive advantage. It's essential to remain competitive, efficient and profitable in a business environment. To do this, it's vital to continually evaluate and improve operations or eliminate disadvantageous activities, ultimately providing more value to customers. The value chain is divided into primary activities and secondary activities (Knez, Jaklič, & Stare, 2021).

The company's primary activities can be divided into **inbound logistics**, which corresponds to the inventory flow in the pre-production stage, and upstream supply chain, which is how materials and resources are obtained from suppliers before the final product or service can be developed. Since GI doesn't produce glass, the company has pre-selected its suppliers and receives it on its premises. Next, **operation logistics** represents how the glass is produced, resulting in a final product service. This includes the fully automated glass process, the technologies and equipment used for cutting, edging, frosting, carving, sharpening and tempering to produce high-quality glass products efficiently. In addition, GI employs a sophisticated quality control system, such as automated inspection machines, to guarantee consistent product quality.

From here, there is the downstream supply chain, which involves the movement of finished goods from the business to its customers, starting with **outbound logistics**. Once the product is finished, it needs to be distributed. GI has a 4,000m<sup>2</sup> facility that is also used to store finished

products ready to be delivered to the consumer. In these logistics, there is also attention to customised packaging solutions to protect fragile glass products during transport, and, finally, there is distribution and technical assembly at the project site. Finally, the primary activities include Marketing, Sales, Service and Customer Support, which have already been detailed in section 04.3.1 of the Business Model.

Secondary or support activities help primary activities to create an advantage over competitors. This includes **company structure**, which represents how the company is organised and managed. It can consist of management control systems, regularly maintained facilities and equipment to avoid downtime, ensuring safety and safeguarding quality, and careful financial planning and budgeting essential to preserving financial stability and growth. In addition, **human resource management** is the entire process that involves managing employees and hiring new ones. In this support activity, we have workforce management, employee training in safety procedures and glassmaking techniques to maintain a qualified workforce and the importance of health and safety equipment and protocols to ensure the well-being of employees in the manufacturing environment. The third important activity is the development of technology, which is crucial for a company's innovation and gaining an advantage over competitors by increasing efficiency or lowering production costs. GI does not have the power to introduce significant technological improvements to the product. However, its development is related to process optimisation, automation and the company's continuous improvement to reduce energy consumption and other costs in the production process. Finally, **procurement** is how resources and materials are obtained for production. It is therefore important to mention the relationship with suppliers, which GI has built up and nurtured over the years and which, as already mentioned, is highly dependent on its suppliers, making it difficult to negotiate more favourable conditions and guarantee a reliable supply chain.

All these activities in the value chain above create value for the company. However, there are points for improvement and activities that lead to GI being at a particular disadvantage, such as the number and quality of machines and the production process being limited to the company's financial capacity, not allowing it to produce more quantities and larger dimensions. Other points for improvement are transport and outbound logistics since the process is not as efficient from the end of the glass production process to the customer, since transport is not carried out effectively, leading to orders being stored for some time in the factory, which ends up taking away space that could be used to increase the factory's production capacity and satisfy the growing demand from national and domestic sources.

The analysis highlighted the points where efficiency can be studied, improved and activities restructured, where costs can be optimised, and value can be maximised for both customers and the company. Furthermore, recognising the interdependencies between the different functions makes it possible to make informed decisions that align with the overall strategic objectives (Salvi, 2018).

### **06.2. Firm-specific/competitive advantage**

**VRIO analysis** is a strategic tool designed for organisations to discover, evaluate and protect their resources and capabilities and to assess how the company's resources contribute to its market position and long-term competitive advantage. VRIO is the acronym for a four-question framework that focuses on **value**, **rarity**, **imitability**, and **organisation**. A company has a sustainable competitive advantage when all four VRIO conditions are met (Fisher G. , 2020).

Firstly, it is crucial to identify the GI's key resources and capabilities to apply the VRIO framework. As we saw in the previous sections, there are several types of resources: Physical, Intellectual and Human (Greene, Brush, & Brown, 1997). **Physical resources** are rarely a source of competitive advantage since companies can often buy them, and they are represented by the factory, equipment, machinery, and vehicles that the company owns. **Unlike physical resources, human resources are not** easy to acquire, so they can sometimes offer the benefits

of a sustainable competitive advantage and are made up of competent employees who guarantee the quality and efficiency of products. Finally, **Intellectual resources** can often be considered a sustainable competitive advantage and are made up of the company's intellectual property, which may in some cases be protected by a patent, which GI does not own, but also other components such as brand image, in which case GI is known for its commitment, the quality of its products and services and has a strong reputation (Appendix [18](#)).

This set of **capabilities** includes the company's extensive and long-standing experience of the market, its long-standing and loyal relationships with its customers, the selection of glass suppliers, where various criteria are taken into account, technical consultancy for planning and supporting the customer's needs, the fully automated process of cutting, edge treatment, tempering or gas tempering, the quality control system, the wide range of products it offers and, finally, the technical assembly of the glass and technical support for all kinds of purposes (Appendix [19](#)).

Each resource and capability is evaluated in value, rarity, imitability and organisation. If none of the conditions are met, GI has a competitive disadvantage. If only the first condition is completed, the company faces competitive parity. When resources and capabilities are valuable and rare, the company has a temporary competitive advantage, and when all the criteria are met, the company will have a sustainable competitive advantage.

The diversity of the product portfolio may allow the company to create a competitive advantage, but it cannot maintain it. The resources that GI has at its disposal that can give it a sustainable competitive advantage are the right people with diverse competencies and employees with the skills and knowledge to carry out their tasks and responsibilities effectively.

They are certainly valuable for the whole production process. They may be rare because training and experience are necessary to maintain a strong workforce. Still, for the same reason that they

are rare, they may not be rare because competitors can get there by investing in training and developing the workforce.

As far as machinery is concerned, a well-designed factory layout and a commitment to technology can provide the most appropriate response to the most diverse market demands, which is valuable but not rare since, in a sector like the glass industry, adopting technology is a factor that requires significant investments and a specific financial capacity, which GI does not have, which makes these resources and capabilities rare and difficult to replicate since everyone needs them to survive in this market.

Finally, GI's strong image, known for its commitment and quality, leads to customer loyalty and trust, which translates into repeat business and positive references that further reinforce the company's reputation. Whilst all these resources are valuable, they are not necessarily rare. In Portugal, where all companies are similar, providing the same services and satisfying similar needs, resources such as brand image are valuable but fail to be rare since the main competitors also have a well-established brand image and a long history of quality and commitment.

The other resources and capabilities described above, such as technical consultancy, supplier selection, and technical assistance, are considered valuable. Still, they also fail the second condition because, as already mentioned, the Portuguese glass market is characterised by the similarity of companies that have the same dependencies on the same suppliers, identical products and services, similar demand and customers, niche segments and the glass manufacturing process itself, so uniqueness is hard to find.

In short, the GI's resources and capabilities fail the rarity test and, consequently, the imitability and business organisation tests. Therefore, the GI has value but no rarity, which puts it in a **position of competitive parity**, meaning that it is not in a position of advantage over its competitors (Porter M. E., 1998). Its resources and capabilities are valuable but common, which makes it challenging to compete in the market (Appendix [20](#)).

## **07. Diagnosis for project**

### **07.1. Motives**

Since its inception, GI has maintained an unwavering commitment to quality and experience for everyone it works with. At the heart of the company's vision is the ambition to be recognised nationally and internationally as a leader in the market in which it operates and to establish a global presence distinguished by the excellence of its products. The company is generally on a positive trajectory, with revenues increasing yearly, generated by its loyal customers in the domestic market. Even though GI already has some sporadic projects outside Portugal, which it supplies by indirect exports, they are eager to go beyond its borders and create a more robust and resilient business model that is less susceptible to the fluctuations and risks of a single national economy.

Therefore, the company aims to be competitive globally and build a long-lasting legacy in the international glass industry. Economic stability and diversification are the guiding principles that resist regional recessions. This internationalisation is not just seen as a growth strategy but as a comprehensive approach to ensuring a sustainable and dynamic future, enhancing the brand and making a significant contribution to the international glass production landscape, being always a reference in providing solutions in the field of glass processing and double glazing on a global scale. Nonetheless, GI management is on the ground and aware of the company's limitations. Their limited familiarity with foreign markets prompts a balanced strategy, acknowledging the inherent risks. Mindful of their limited financial resources, they seek an execution plan that allows them to grow in a phased and sustainable way, ensuring a resilient and calculated venture into international markets.

### **07.2. SWOT Matrix (internal + external analysis)**

The SWOT analysis evaluates the firm's internal (Strengths and Weaknesses) and external (Opportunities and Threats) elements to perceive, in a nutshell, a company's present and future position within its competition (Teoli, 2022). Completed SWOT analysis table in Appendix [21](#).

The following paragraphs provide detailed explanations for specific points.

Regarding **Strengths**, GI demonstrates experience, with a history of over 30 years of delivering and satisfying its clients. Over the years, it has been improving its efficiency in cutting and assembly methods according to its resources and capabilities. In addition, exhibits experienced human capital and advanced capital goods, possessing recent technical equipment for assembling mirrors and glasses. Finally, a **robust quality policy** and a Quality Management System were created (based on the NP ISO 9001:2015 standard, (Instituto Português da Qualidade, 2015)). Thus, a high level of quality is achieved in both products and services, having reviews to ensure every quality standard is met.

However, the firm also displays some **Weaknesses**, such as a **low commercial effort**, as the organisation only has four salespeople, two in charge of visiting clients and the other two in the office. Additionally, they do not invest much in promotion, being a considerable part of orders attained by the word-of-mouth method. Another weakness is **insufficient capacity** since GI's actual facility operates at maximum capacity, which restricts its ability to satisfy all client's needs and grow. Plus, there are significant restrictions on product size due to the factory production limitations, and transport service has to be subcontracted if the delivery localisation is further down Aveiro, so there are **product/service limitations**. Plus, with **insufficient company structure**, as in the context of international projects and strategy, it can be asserted that the responsibility predominantly rests on a single individual, a situation that is not optimal. Lastly, a **low market share** due to no price, quality, or innovation differentiation leads to GI not possessing competitive advantages and lacking information regarding competitors' pricing and offers.

One example of the Opportunities for GI to explore is **sustainability**, given that the Glass industry is investing in energy efficiency and renewable energy transitions to minimise total environmental consequences (industriAll, 2022), realising efforts for zero carbon emissions. GI already offers double glazing, but they could also start to provide innovative products such as

energy-efficient coatings. Moreover, **enhance online profile/presence** towards B2B with initiatives on the website, referral programs, social media, online directories, and review platforms. Plus, **government subsidies** exist, and several government programs, some being promoted by the EU, finance family expenses for house improvements, like changing windows (Prado, 2023), to increase homes' energy efficiency, as indicated in the PESTEL analysis. GI could encourage its customers to adhere to these financial supports and try to increase demand. Finally, **customer loyalty** strengthens the company's relationship with existing clients and builds a base of loyal and repeat buyers, retaining its best clients with methods like promotions in quantities.

Nevertheless, some Threats need to be considered, like **lack of market differentiation** as Portuguese flat glass moulding and all transformation companies have similar products, services and prices. In addition, there are **international regulatory challenges** because some areas of the world have certifications that need to be respected (for example, CEKAL certification is required in France). Moreover, there are **cultural barriers** as external markets may have different preferences regarding the types of glass they consume and the treatment applied, and they can also be more price sensitive. Lastly, **given customers' increasing need for larger product sizes, size demands** hampers GI's ability to meet and keep up with these requirements.

#### **07.2.1 Uniqueness and sustainability**

As indicated above, uniqueness is absent in the treated glass market due to the lack of differentiation between companies. GI and its competitors all share similar products and services, as seen in Appendix [16](#). However, one of the competitors, Vitrochaves, differentiates itself by providing a unique service, a simulator (Vitrochaves, 2023). This entity's website creates a technical sheet and a declaration of performance in seconds by letting the client choose the type, colour and family of glass, among others. Thus, the authors understand that what stands out in a company in this area is the price-quality ratio and the execution speed of the

production, transport and installation service. Uniqueness is hard to find, but it is possible, given the quality of their products, to differentiate that organisation by providing a distinct type of glass, having unique glass measures, or adopting a trend.

One distinct way to explore the market is by embracing an essential trend: sustainability. The EU (European Union) has been increasingly involved in this trend, delineating a final objective: to make the EU climate-neutral and sustainable by 2050 (FEVE, 2023). Some commitments are being fulfilled in the glass section, which is energy-intensive. A notable example is ORAÉ, a brand-new foundation glass that has the lowest carbon footprint ever and utilises a high volume of recycled glass, launched by Saint-Gobain (Saint-Gobain, Saint-Gobain lança Oraé®, 2023). GI can explore this opportunity, already presented in section 5.2., without defocusing on the business performance and results.

GI has achieved satisfactory sales results due to prompt execution, quality, and competitive pricing. However, it lacks uniqueness and demonstrates a limited commitment to sustainability, having a high percentage of glass waste and not using renewable energy sources.

### **07.2.2 Outsourcing and divestments**

Based on the suppliers' table (Appendix [22](#)), the authors can perceive that, with all possible information gathered, most of the top 20 Portuguese firms in the flat glass shaping and processing business purchase glass from the two leading suppliers, Saint-Gobain and Guardian Glass, respectively. This way, it is comprehended with this sample that the number of providers is reduced and concentrated, leading to supply ruptures, high bargaining power for suppliers, restricted choice for the buyers, dependency risk and innovation stagnation. Both mentioned companies are significant players in the flat glass European market (Mordor Intelligence, 2022) and hold much power in the national market. Saint-Gobain is the most prominent glass manufacturer worldwide, as seen in Appendix [23](#).

GI buys the glass sheet and cuts it in the proper measures, according to each client's request. Since GI doesn't have the machinery for curved glass in its warehouse, it subcontracts to acquire

the final product. Another outsourcing is transporting glass from the GI factory to the client when the distance is high (typically if the delivery place is localised further down than Aveiro). This way, GI only handles the delivery in the north of Portugal.

Regarding divestments, GI had to stop expanding its monetary resources in two international markets, Spain and France. In Spain, we only realised some sporadic orders and weren't structured enough to perform delivery and transport. It didn't meet its expectations in France, operating with a low turnover of less than 5%. GI fulfilled some orders in this marketplace and even created a local entity due to CEKAL certification but didn't invest to remain in the market or promote its brand. After these two unsuccessful situations, this organisation is still trying to reactivate its international presence.

### **07.2.3 Cultural/ restructuring challenges**

When it comes to entering an external market, GI needs to perceive that environmental, social and corporate responsibility, acoustics, energy efficiency, thermal comfort, fire protection, indoor air quality, rehabilitation, innovation and quality, environment and safety (Saint-Gobain, Mundo Saint-Gobain, 2023) are all criteria that affect the purchase of a particular glass, and each country values them differently. Some countries in Senegal prefer quantity and price over quality. In contrast, others prefer certain types of glass, like double laminated glass for Spain, triple glass for France, and double tempered glass for Portugal (CEO meeting).

Apart from regional differences, legislative restrictions must be respected also. Certifications are an efficient method to demonstrate the quality of products and even their acceptance in specific markets and compliance with legislation, parameters and inspections. With these, organisations can gain some competitive advantage, access to new markets, increase trustworthiness, and upgrade their reputation. As is observed in Appendix [24](#), CE, ISO 9001, IPAC Certif /Cekal Insulated, IPAC, PME Líder and Climalit are all examples of certificates that various Portuguese glass firms own. This last referred table can be divided into three parameters: certifications (from CE to ISO 14001), projects (Compete 2020, Centro 2020 and

Norte 2020) and awards (PME Líder and PME Excelência), which are all further explained in Appendix [25](#). As evident in Appendix [24](#), GI is recognised by the most common certificates and has neither been awarded nor involved in any of the projects.

### **07.3. FSA - CSA Matrix**

Another framework is the Firm Specific Advantages- Country Specific Advantages (FSA-CSA) Matrix. It is an international strategy that assists entities in choosing whether to highlight their FSAs or their local conditions, the CSAs (Hillemann & Gestrin, 2016).

Based on all previously described FSAs in section 6 and CSAs in section 5.3, it can be perceived that the CSAs of the home nation hold a strong position, emphasising some factors such as Portugal being part of the EU and CPLP and its relatively low-cost labour and its beneficial geographic location. The FSAs are limited since GI's experience, commitment, reputation, and product/service quality, among other elements, are not enough to differentiate itself in the Portuguese flat glass shaping and processing market. Thus, GI is positioned in the first quadrant, mainly benefiting from country-specific advantages. Economic theories affirm that every company, regardless of its particular traits, in this first quadrant context, should export as an internationalisation entry mode (Academic Library, 2023). After all analyses, it becomes clear that GI should be placed in the first quadrant, Appendix [26](#). However, due to the rapid development of other markets, the company could be relegated to the second quadrant in the near future. An example of this is several Asian nations that are starting to grow in international markets and take advantage of their technology, efficiency and low labour costs. If this trend persists, these countries could challenge and even eliminate Portugal's specific advantages, leading this country to drop to the weak sector of CSAs.

Based on the diagnosis, GI is ready to operate in an international market through exports by leveraging its CSAs and should take timely action to avoid losing the first quadrant position.

## **08. Growth Strategy**

### **08.1. Organic Growth**

In business, organic growth is based on the natural and progressive increase of a firm's operation, revenue, and market presence, utilising internal resources (CFI, 2023). GI is already following the path of organic growth by building a new factory in Braga, which will be operational in the next two years, not only to have a more automated flat glass shaping and processing system. But growing its activities and quantity produced will also benefit domestic and international sales. The facility expansion will lead to a 2.5-fold increase in capacity and an improvement in existing products, given that the maximum measurements of final treated glass will increase. Plus, the marketing and sales strategy was altered by changing the company's name from Portuguese to a more internationally oriented name, a name to explore abroad. Rank Up, a marketing agency, realised a website enhancement. In addition, the content of projects and announcements, among others, is being posted, with some regularity, on GI's social media. These internal initiatives facilitate GI's entry into the Dutch market. In alignment with GI's positioning and financial situation, it is recognised that there is a need to persist in organic growth by improving current internal initiatives and adopting new ones, as detailed in the upcoming marketing plan, to upgrade its business model to explore the Dutch market. A study will be conducted in section 10.2 to assess GI's potential for pursuing inorganic growth.

#### **08.1.1. Product markets**

The market for flat glass and its product types is growing at a good pace, as analysed in section 5.2.1. The markets of Portugal and Europe are expanding, but the global flat glass market has a higher CAGR than the European. GI is not included in the biggest nor fastest-growing market, and Portugal isn't one of the major players in Europe, which can harm this company from an international point of view. Hence, it is essential to internationalise. In addition, GI doesn't provide all types of flat glass the competition offers and is in a poor position regarding

maximum measurements. However, the construction of the new facility addresses the poor position regarding measurements.

### **08.1.2. Competitive actions/ responses**

The constant pursuit of market advantage and supremacy is the foundation for competitive actions/responses, representing a dynamic aspect of strategic management. In the flat glass shaping and processing market, there are various tactical initiatives that firms realise in response to their competition, for example, strategic pricing, as all firms end up around the same price and vary depending on the market conditions and rivalrous pressures. With these aggressive price wars, businesses must implement cost efficiency, another competitive action. In addition, regulatory compliance, product quality and safety are highly valued in the flat glass industry and verified with certificates. Moreover, strategic partnerships allow companies to collaborate with other industry players, such as glass suppliers, which is a distinct way to obtain verified glass. Also, following trends leads to glass categories, their attributes, and their plausible combinations to develop (Cruz, 2022). Plus, product innovation, given that flat glass firms keep creating new glass varieties with energy-efficient features, improved durability, special solar/acoustic protection or even unique coatings to set oneself apart from rivals. Another competitive response is market expansion, consisting of entering new geographic markets, as more and more Portuguese entities establish their presence in international territories or diversify client categories. Additionally, after-sales service can be provided since businesses can obtain a competitive edge and guarantee client loyalty and satisfaction.

Various competitive actions are executed, so flat glass companies must closely monitor the market dynamics and competitive landscape to maintain and enhance their position.

### **08.2. Inorganic Growth**

In contrast to Organic Growth, when a company increases its business activity (internal), Inorganic Growth arises from Mergers, Acquisitions or alliances/partnerships (external). This type of growth is often considered a faster option when compared to Organic growth. Inorganic

growth strategies can be risky and expensive, as they involve significant financial investments and require careful due diligence to identify suitable partners and overcome integration challenges. With the goal of internationalisation, it is essential to analyse the different Inorganic growth alternatives and the viability of their implementation according to GI recourses and the industry analysis (Appendix [27](#)).

On the one hand, inorganic growth has several **advantages** over organic growth. It is frequently considered a quicker way to grow, providing immediate access to the target company's new markets, customer bases, and distribution channels. Additionally, it offers the possibility to capitalise on existing competitive advances of the target, access their proprietary technology and use the expertise of their staff. After the merger or acquisition has been completed, the combined entity should theoretically benefit from revenue and cost synergies, like combining core activities or reducing the company's overall risk due to its increased market share and financial strength, which improves access and credit conditions, among other factors.

On the other hand, it is also vital to understand this type of growth has **disadvantages** and that mergers and acquisitions are complex, need thorough due diligence before being completed and have several associated risks. Inorganic growth is viewed as riskier, from finding the right partner to the high upfront costs and management challenges. In the worst-case scenario, poor integration can cause the company to destroy value, leading to a decline in growth and profit margins, considering how pricey and multifaceted M&A can be. The most common reasons for the unsuccess of inorganic growth strategies are overpaying for acquisitions, inflating synergies (especially on the revenue side), corporate cultural differences, and inadequate due diligence.

In **conclusion**, GI should not pursue an M&A strategy in the short term, mainly due to financial and operational constraints and the increased risk, which isn't aligned with the management risk profile. Additionally, the company is not a front-runner in the Portuguese market and still seems to have a lot of inefficiencies and strategic positioning matters to correct. Therefore,

several organic growth opportunities still exist that should be considered first. Given the company resources and industry characteristics, joint ventures and partnerships seem the most balanced option. M&A should only be viewed later and cautiously, mainly due to the company's lack of experience in this field.

### **08.3. Business Strategy (implementation) (IP: Matilde Ferreira)**

The following points will describe GI's strategy for entering the Dutch market. To help outline the strategy and ensure that it focuses on all the essential and crucial points, the author uses the Strategy Diamond (Appendix [28](#)). This model comprises five elements: arenas, vehicles, differentiators, economic logic, staging and pacing, and all together, they create and guide a comprehensive strategy (Hambrick & Fredrickson, 2005).

#### **08.3.1. Arenas**

The first facet of the diamond defines the scope of the company's expansion, the category of products and services that will be available in the new market and how distribution will take place.

GI aims to expand into the Dutch market. However, the company will not set up any factories or production processes in the Netherlands due to its financial capabilities. Instead, the company will export its products directly from its factory in Portugal, as explained in more detail in the market entry, section 10.4. Since GI will not be expanding its production process outside of Portugal, it will have the opportunity to sell all the products available in its portfolio since its production cost to export to the Dutch Market is independent of the type of glass. Nevertheless, it's important to emphasise that although GI will be able to sell all kinds of glass, there is one that the company will be more focused on.

As the authors have already explained, there are three types of glass in the market: laminated, tempered, and insulated. Insulating glass is generally the most expensive type, requiring more labour and a more complex production process. Its characteristics lead to high demand, such as its resistance and acoustic and low-temperature insulation.

As seen in the following sections, the authors concluded that insulating glass will be most sought after. The focus on this product to enter the new market is explained by several reasons, not only because it is the most sought-after type of glass. Firstly, as already mentioned, it requires a lot of labour, and given that GI will position itself in the market as a cost leader and will produce all its orders in Portugal, it will be able to benefit from the low labour costs that Portugal registers when compared to the Euro Zone where the estimated hourly labour costs are €34.3, which is 113% more than Portugal's €16.1 (Eurostat, 2022), as explained in section 03.4. It will, therefore, be able to sell its products, especially insulated glass, at lower prices than its competitors and gain a competitive advantage.

Furthermore, in 2022, GI recorded the following sales percentage:

*Table 3- Product mix in Portugal*

GI Product Mix - PT 2022				
Type	Laminated	Tempered	Isolation	Total
Q	9 600	2 400	52 047	64 047
%	15.0%	3.7%	81.3%	100%

As can be seen in the table, insulating glass is the main product and accounts for 81.3% of GI's sales. This means that in the Portuguese market, insulated glass has the greatest focus and is the company's primary source of revenue. Therefore, the experience and focus on this product type can be transferred to the Dutch market, which is an added value for this internationalisation.

In this way, GI will be able to sell at lower prices than its competitors, especially the more expensive but, at the same time, more sought-after glass in this market. The company will be able to sell products at lower prices than the Dutch Market but higher than the Portuguese Market, as the authors will explain in more detail in the following sections.

Finally, since the company will not have its premises and will only export the product, it will not have any installation, assembly, or technical assistance services, as in Portugal, only technical consultancy services. Therefore, its segments will mainly be construction companies and other companies specialising in installing windows and glass, selling B2B.

### 10.3.1.1 Transportation

After defining the strategy for products and services and indicating the company's segments, it is crucial to explain how glass products will reach the Netherlands.

The authors evaluated two ways of getting to the Netherlands: land or sea. In both situations, GI arranges all the transportation by its trucks or a subcontractor company. Regardless of the form of transport, by land or sea, the glass sheets will be transported in a **40ft Dry Cargo Container**. For insulated glass, as the dimensions of this type are more significant than the others because of the air space between, the 20ft cannot carry much of it. Hence, the 40 ft containers transport all the types, especially insulated glass.

The first option would be to transport the sheets from **Braga to the Port of Leixões** using GI's trucks, which is already done in Portugal when orders are placed until Aveiro district, which would cost €142, a value already approved by the company. From the Port of Leixões, GI would subcontract a company, and the goods would be transported **by boat to the Port of Rotterdam** with the 40 ft container. On arrival at the Port of Rotterdam, the same subcontractor would transport the product to the end consumer using its trucks. According to Rhenius Logistics' online simulator, this transportation by boat would cost a total of €1,047.3 and would take a total of 11 days. After that, it is necessary to have an average cost for the subcontractor to deliver the glass to the end customer.

The second option would be to transport the glass sheets directly from GI's factory in Braga to **the Netherlands** via a subcontractor transport company. Using IMPARGO's online simulator, CargoApps Toll Calculator, and Truck Route Planner, the departure of a truck with a 40 ft container from GI's factory to the Netherlands would have a total cost of €2,733.5 and would take a total of 4 days.

After this, the authors calculated the cost of transportation per m<sup>2</sup> of glass of the two scenarios to see which was more sustainable. They started by presenting the following table:

Table 4- Calculation of transport capacity per container

Type	ft	Max volume (m3)	Utilization rate	m2 of glass transported
Container	40	67.56	70%	966

Max weight	Weight per m2 (kg)	Max Quantity (m2)
27 600	20	1 380

For this calculation, the authors then considered a 40 ft container with a maximum volume of 67.56 m<sup>3</sup>. The rationale for these calculations was, according to Guardian Glass, each sheet of glass is, on average, 24 millimetres thick, and its weight is 20kg per m<sup>2</sup>. With this, it is essential to know the maximum weight a 40ft container can carry, which is 27,600 kg. Therefore, by dividing the maximum weight of the container by the weight per m<sup>2</sup> of each glass, the authors can have the maximum quantity of glass in m<sup>2</sup> that the container can carry, which is, in this case, 1,380. The truck won't be filled 100% with glass due to the space required to transport these products, such as safety equipment or suitable packaging materials, so the authors assumed a utilisation capacity of 70%. Thus, the amount of glass that the container will carry is 966 m<sup>2</sup>.

Thus, the total cost of the first scenario until the Port of Rotterdam is €1,189.3, and the total cost for the second scenario is €2,733.5. In the first scenario, it's important to include the cost of the subcontracted company delivering the parcel to the end consumer from the port of Rotterdam, which is difficult to calculate as it depends from location to location. So, the reasoning used for this question was that in the first scenario, the costs to the port of Rotterdam are €1,189.3, while those in the second scenario are €2,733.5. This means that for GI to choose the second scenario, the cost of delivering the product to the end consumer has to be higher than €1,544.2 (€2,733.5 minus €1,189.3), which is a price well above the average for delivering products in the Netherlands. What's more, if we assume that the customers are in the country's largest cities or most industrialised areas, the furthest city in this category is Eindhoven, which is still 110 km away from Rotterdam and, using the same simulator as before would cost €395,

a much lower value than the one mention above. Therefore, the authors assume an average value of 200 euros for transport to the end consumer.

Table 5- Transportation Costs per m<sup>2</sup>

Transportation costs to the Netherlands						
Scenario	Type	Route	Cost	Cost per m2	Total	Delivery period
1	Truck	BRG - LEIX	142.0	0.15	1.44	11
	Boat	LEIX - ROTH	1 047.3	1.08		
	Truck	ROTH - C	200.0	0.21		
2	Truck	BRG - NL	2 733.5	2.83	2.83	4

Once they know how much glass the container can transport and the total costs, the authors could calculate the cost per m<sup>2</sup> for each of the two scenarios by dividing the transport cost by the m<sup>2</sup> of glass that the truck can transport.

Thus, the cost per m<sup>2</sup> for the first scenario is €1.44, while for the second scenario, it is €2.83. Given that GI must remain consistent in terms of cost leadership, the company should choose the first scenario, transport the glass from GI's factory to the port of Leixões by its means and from the port of Leixões to the port of Rotterdam and finally to the end consumer by subcontracting a company. This scenario is the most economical alternative and should be the mode of transport adopted.

Although GI opts for the cheapest mode of transport, it is also the longest, taking more than twice as many days to reach the port of Rotterdam. It is, therefore, essential to have detailed planning and efficient inventory management to ensure an adequate supply and efficient use of the container with existing orders to avoid shipping containers with little space for utilisation. These costs include insurance to cover lost, stolen or broken products and all protective and safety equipment during transport. It's important to mention that GI is responsible for the return or problems of any parcel. They control the quality and guarantee that the glass goes safely to its destination. On the other hand, if something breaks during transportation, the subcontracted company is responsible, and the transport company's insurance will cover it. It's important to

mention that this mode of transport has limitations and exceptions. Other modes can transport larger parcels, but this requires higher costs and different prices on the part of the end consumer. The company subcontracted to carry out the transportation is the full responsibility of the GI, which assumes all responsibility once the glass is on board and until it is delivered to the end consumer. Although the subcontracted transport company assumes ownership when the glass leaves the Port of Leixões to be delivered to the end consumer, these costs are borne by GI and included in the costs of delivering the order to the end consumer.

Finally, **Incoterms** are essential for defining the responsibilities and expectations of the GI and the end consumer. Incoterms are international commercial terms that constitute a set of 11 rules that define who is responsible for the different tasks during international transactions, reducing the risks of problems with understanding costs (Davis & Vogt, 2020).

There are several types applicable to different types of transportation, however, applicable to all modes of transportation, there are five: Carriage Paid To (CPT), Carriage and Insurance Paid to (CIP), Delivered at Place (DAP), Delivered at Place Unloaded (DPU) and Delivered Duty Paid (DDP). The term chosen by GI will be the last one, **DDP**, since it is the standard commercial term generally used by Dutch companies importing glass from other countries (meeting of Dutch companies). In fact, through contacts with Dutch companies, the authors know that companies in this market import glass from Spanish suppliers and use this Incoterm. Under these conditions, GI assumes all responsibilities during the shipping process, as well as covering all associated costs and risks until the goods are delivered to the final consumer.

In addition, the GI makes sure that the goods are ready to be transported and fulfils export and import responsibilities, paying all taxes and insurance. The following table gives a better understanding of the responsibilities and costs of GI and the end consumer:

Table 6- Responsibilities and Costs of GI and the end consumer (DDP)

Incoterm	Loading at GI's facilities	Export declaration costs	Carriage to Leixões's port	Unloading of truck in Leixões's Port	Carriage to Rotterdam's Port	Insurance	Unloading in Rotterdam's port	Carriage to place of destination	Import customs clearance	Import duties and taxes	Unloading at destination
DDP	GI	GI	GI	GI	GI	GI	GI	GI	GI	GI	End consumer

### 08.3.2. Vehicles

The next step is to define what is needed to operate in this market and whether there are any requirements, certificates, or criteria to be able to start operating in the Netherlands. It is also time to study possible partnerships that GI could establish to help with entry into the Dutch Market.

After some market research, the authors discovered that the Dutch glass industry took a proactive step in 2002. The government approved an initiative for glass recycling, resulting in the creation of **Vlaskglas Recycling Nederland**. This non-profit organisation is dedicated to coordinating efficient and environmentally friendly waste glass recycling activities while ensuring compliance with government regulations. This organisation is financed through a recycling fee of €0.30 for every m<sup>2</sup> of flat glass produced or imported into the Netherlands. Thus, GI must know that this fee applies to all glass producers or importers and is levied by the Independent Administration for Sheet Glass (OAV in Dutch) every quarter. After payment, each participant receives a certificate of participation.

Regarding partnerships, these can be considered to facilitate GI's entry and development in the Dutch market. Nevertheless, as seen above, it is safer and more viable, at least in the first few years, for the company to focus on organic growth. In the future, the authors believe that when the company has more knowledge of the market, is better positioned and more dynamic in its sales and logistics, GI could establish partnerships with companies that don't produce glass but build window frames or façades which are complementary products to those of GI. In this way,

GI would be its glass supplier on the market, and the Dutch companies could send their product to Portugal under GI's responsibility, with both companies benefiting from the situation.

Thus, for market entry, the main requirement of the Dutch market is the **certificate of payment of the recycling fee**.

### **08.3.3. Differentiators**

After looking at the requirements for entering the Dutch market, the next step is to explain how GI's entry will differ. This centres on the attributes that will be unique to the company and give it a competitive advantage.

The company's main differentiating factor in the Dutch market will be the lower price at which it can offer glass products, especially insulating glass. GI endeavours to manufacture its products in Portugal at the lowest possible cost compared to its competitors while maintaining quality. It aims to establish a competitive advantage through **cost leadership** to differentiate itself from other competitors and thus create shared value.

In addition, the Dutch market is susceptible to environmental issues, so GI will be able to differentiate itself by paying attention to sustainability without compromising its position as a cost leader. Every year, competitors' pricing strategies should be analysed in depth, and GI's pricing can be done with the help of the pricing structure, Appendix [29](#), (The Pricing Framework and a Firm's Pricing Objectives, 2015). Both will be examined in detail in the Marketing Plan, section 11.

### **08.3.4. Economic Logic**

After defining how the company intends to differentiate, it remains to explain how it will do this and how it makes money above its cost of capital. Formulating a solid economic logic will lead to a strong and profitable position in the Dutch glass market.

The company will compete on a cost leadership basis, offering more competitive prices than the competition, which means that it aims to produce and export its products at the **lowest possible cost** while maintaining quality. Therefore, the company must focus on domestic

production in Portugal to ship directly to the Netherlands at the lowest possible price to satisfy consumers and shareholders through significant market shares and sales volume.

To achieve cost leadership, GI will focus on increasing its sales volume to capitalise on **economies of scale** and offer lower prices. The concept behind this strategy is that if you produce at a low cost, you need large sales volumes to reduce prices per unit since fixed costs are diluted over a large quantity and thus maintaining the same margin since the overall costs are lower (OECD, 2015). The company can achieve greater efficiencies and cost savings in its manufacturing processes by optimising production schedules and responding effectively to market demand. It should also be noted that its margin could even increase with the opening of **GI's new factory** in 2026, which is estimated to have 2.5x the current capacity of the old one, giving the company more conditions to produce larger quantities of glass and more efficient, making this process even more accessible and more viable.

Another critical factor in achieving cost leadership is that the company must become highly **efficient** and **effectively** manage the **supply chain**. Its rationalisation is essential to minimise exporting products' transport, handling and storage costs (Gibbs & Benedettini, 2004). It will have to reduce its marketing and transportation costs and take advantage of the low-cost labour available in Portugal. With this, the company will achieve and maintain a competitive advantage through the lowest possible cost and, consequently, sell its products at a lower price than its competitors (as will be analysed in the marketing plan), ultimately creating a sustainable and robust position against its experienced competitors in the Dutch market and obtaining a high cumulative return for shareholders.

An important point is for GI to anticipate how competitors will react to protect its position. GI entering the market as a supplier of products at a lower price could lead to a price war, as companies may choose to match the lower prices that GI provides. Nevertheless, the authors consider that, as studied above in section 5, the glass industry is in the midst of enormous

growth, which means that even if GI gains a certain amount of revenue, it doesn't mean that its competitors have to lose that same amount of revenue, even when these companies have stable market and financial positions.

**08.3.5. Staging and pacing**

This facet focuses on the speed and sequence of market entry actions. The company's strategic phase can be divided into three stages:

**Phase 1:** Internationalisation will begin in early 2024 and will be marked by implementing the operational plan and the entry strategy. The entry mode, explained in the following section, will be carried out by participating in trade fairs and conferences for initial client contacts and contracting a freelancer who will make the necessary promotional and marketing adjustments.

**Phase 2:** Starts in the second half of 2024, when the first sales are expected. This phase is characterised by the promotion of the brand, knowledge of the market, installation in the market and modest growth. New hires will be made due to the expected increase in sales and to work in the new factory.

**Phase 3:** The final phase, from 2026, when the new factory is expected to open, allows the company to accept more orders, significantly increase sales volume and take advantage of economies of scale, as well as all the efficiencies discussed above. A new sales agent will be hired to increase the market presence further.

The table below shows the main events of each phase of the strategy.

*Table 7- Project timeline*

Year	2024		2025		2026		2027		2028	
Semesters	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Phases	1st phase		2nd phase				3rd phase			
Factory	Current factory				New factory					
New hires	1st agent				2nd agent					
Sales	New factory's personnel				New factory's personnel					

**08.4 Market entry**

GI intends to expand internationally, targeting the Netherlands. This step in the strategy requires an in-depth analysis of the various market entry options. As we saw during the definition of the

business model, no additional certification is required to operate in this market, only the payment of a recycling fee.

Entering the Dutch market can take various forms, such as opening a factory and owning facilities in the country, mergers and acquisitions or greenfield investments (Schellenberg, Harker, & Jafari, 2017). However, these options are excluded due to the level of risk and the company's financial capacity.

Similarly, project-based companies and joint ventures, which require operational staff in the target market, do not align with GI's objectives. Contract manufacturing, licensing, and franchising are appropriate for companies with highly differentiated products, which is also unsuited to the GI offer. Electronic marketplaces and e-commerce, designed for B2C, are considered unsuitable for GI's predominantly B2B orientation. Therefore, the most favourable options for GI's market entry are direct export, cooperative export, or countertrade (Appendix [30](#)). Strategic alliances and consortia can be considered as the next step.

The most viable implementation method for the authors, initially, will be **direct export**, as it allows for a substantial opportunity for growth and implementation, as well as mitigating more risks in the Netherlands. The other options are not excluded in the future, but direct export allows greater control of the strategy at a lower cost to realise the company's value proposition (FAO, 1997).

This method will be supported by attracting clients at fairs and conferences and by contracting a sales agent on the ground who will present the company and create contact with clients. Awareness of the agents' roles, responsibilities, and expectations is essential. The GI will provide sales and marketing materials to sell its products on its behalf, and the agent will introduce the client to the company. In the end, GI will receive the sales revenue and the agent a base salary plus a 2.0% commission for those sales. The GI and the freelancer must have

mutual interests, common goals, and high levels of commitment, collaboration, and trust. Training and potential support for the agent abroad should also be a factor.

The forecasted sales agents will be contracted as freelancers, who are considered self-employed (zelfstandig ondernemer in Dutch) and are responsible for paying Dutch income tax and VAT (value-added tax) on the services they provide, according to Dutch legislation. These freelancers arrange their disability insurance (arbeidsongeschiktheidsverzekering in Dutch) and pension. The authors believe this is the best type of contract for GI since it is more flexible and makes it easier for the company to terminate the agreement if desired or if the project isn't successful.

In addition, the author's analysis shows that in the Dutch market, there are several small companies as GI, so the company would be able to supply products, especially when there are companies in this market that import glass from other countries, such as Intal and Groot & Visser, which import the glass they work with from Spain. These companies are dedicated to building and assembling façades for various purposes and have been operating in the Dutch market for over 20 years. This example shows that the proposed model is viable and is already used by other companies in the market (Appendix [31](#)).

Furthermore, by manufacturing in the Portuguese market, GI will have better and more favourable conditions in terms of efficiency in energy and labour costs than some of its competitors, for example, the Spanish. In 2022, Portugal had an average hourly labour cost of €16.1, while Spain and the Netherlands recorded €23.1 and €40.5, respectively (Statista, 2022), Appendix [32](#).

In this sense, the authors expect GI to be able to establish itself in the market with some ease, thanks to the combination of commercial agents with knowledge and experience in the market, as well as the openness, as mentioned earlier, of local companies to supply from external producers and their advantages in terms of labour costs and energy efficiency.

It is essential to mention that due to the current uncertain success of the project and the relatively small scale of operations in the first years, the authors do not recommend GI to open a branch in the Netherlands Private Limited Company (BV). In the short term, this phenomenon would increase the costs of accounting and legal services, increase bureaucracy and make it harder to close business if the project doesn't meet its expectations. According to Dutch legislation (Netherlands Chamber of Commerce - KVK), GI is not legally required to open a legal entity or branch in the Netherlands. This could be mandatory if the company is permanently established in the country. However, that is not foreseen for the near future.

In short, GI plans to enter the Dutch market, and the authors believe in the low-risk strategy of direct export and employing a sales agent on the ground. By becoming a supplier to Dutch companies that sell complementary products to its own, GI will achieve a good position in the market with its low prices due to the benefits of manufacturing the products in Portugal. Direct export involves selling products directly to the target market, allowing you to control operations, prices, and customer relations. The marketing plan will elucidate a detailed strategy regarding objectives, promotions, and prices adapted to the Dutch market.

### **08.5 Resources gaps**

The resource gap analysis focuses on the resources held by a company. It helps to identify the gaps between current resources and the resources needed to achieve future objectives and projects (Teece, 1984). This analysis is essential for the Dutch market's internationalisation because it helps plan the resources required. Possessing valuable, rare, and imitable resources is necessary but insufficient for achieving a competitive advantage; these resources must also be managed effectively (António N. C., 2012).

For the company's internationalisation to the Netherlands through direct exports to be successful, it is necessary to consider financial resources to enter the market, human resources, qualified staff, a local agent with experience in the Dutch market and new workers in the factory in Portugal to respond to the increase in sales and capacities of the new factory and, finally, the

new factory itself, physical resources, for the proper storage and logistics of the products that will be exported.

It should be noted that the authors considered the purchase of a storage facility to store glass that could be shipped from Portugal to the Netherlands. However, since GI will be exporting its products, the glass will never have to be stored, as it is only distributed when an order is placed. What's more, the subcontracted company in the transportation process already has the job of distributing it to the end customer from the port of Rotterdam, so it wouldn't make sense to pay extra transportation costs for it to be stored and transported back to the customer.

The first gap will be in financial terms since an international expansion requires various costs that will be strongly felt initially as the company dives into an unknown market. The main expenses will be agent salaries and commissions, marketing costs, accounting and legal services. These costs are expected to be offset by revenues, which will increase yearly, and the opening of the new factory, which will allow for higher sales volumes.

In terms of personnel, there is a lack of international experience on the part of the workers, and the agents who will go into the field will need training and knowledge about the company regarding its products, history, and activities. In contrast, the workers in Portugal need international trade training. Regarding transportation, there may also be gaps as to who is responsible and who bears the costs of each transport stage.

In short, the main gaps are the significant costs with market entry, but these can be resolved with the start of GI's sales and activities in the long run. The lack of knowledge of the employees and the company in the international market will resolve the information between the contracted agents with experience in the market and the data that GI will transmit to the agent about its value proposition. Finally, the transportation gap will be resolved by establishing a commercial term, Incoterm, between the subcontractor and GI.

## **09. Overall Conclusions and Recommendations**

### **09.1. Recommendations**

With a focus on the resilient Dutch construction market, this strategy centers on organic growth, efficient operations and adaptability, aiming for a competitive advantage in international expansion. Therefore, the recommendations are, as far as **Market Selection & Network Development** is concerned, for the international expansion initiative, the Dutch market is prioritized due to its resilient construction sector and favorable business environment. The aim is to establish a strong network by leveraging various entities, facilitating links with customers and distributors in the Netherlands.

The authors recommend a **focus on Organic Growth**, the strategic approach involves continuing the trajectory of organic growth, capitalizing on upcoming installations. Caution is advised in pursuing inorganic growth, with a preference for exploring partnerships before considering mergers and acquisitions.

As for **Segmentation and Positioning**, the emphasis is on small companies in the Dutch construction market, aligning offers with the size of their projects and specific needs. The positioning strategy revolves around emphasizing cost-effectiveness and high-quality products, establishing the brand as a competitive option in the market.

As for the **4Ps**, the product focus centers on HR++ insulated glass, in line with sustainability trends and the demands of the Dutch construction market. A competitive pricing strategy is adopted to attract small companies, taking into account production and transport costs. The distribution strategy involves direct exports to small businesses, complemented hiring a sales agent for a physical presence on the Dutch market. Marketing efforts prioritize industry events, sales agents, loyalty programs and email marketing campaigns to effectively reach and engage the target audience.

When considering **Scenario Analysis**, contingency plans should be developed based on the knowledge gained from scenario analysis, particularly addressing the challenges highlighted in the worst-case scenario.

As for **Operational Efficiency and Cost Management**, an emphasis on maintaining profitable operations, optimizing logistics and exploiting economies of scale is essential for improving operational efficiency. This strategy aligns with the projected improvement in gross margin after 2026.

In addition, long-term considerations include the potential **Change of Tax Address** to the Netherlands for potential tax benefits, subject to periodic reassessment based on the evolution of fiscal policies.

Finally, to ensure effective implementation, the authors recommend setting up a solid **Monitoring and Adaptation Mechanism**. This mechanism will assess actual performance against forecasts, allowing for timely adjustments to operational plans and financial projections.

## **09.2. Conclusion**

After a thorough assessment, the Netherlands emerged as the most promising country for GI's international expansion, showcasing a balanced profile of economic openness, a favourable business environment, and strategic proximity to Portugal. The expansion of GI into the Dutch market represents a promising opportunity for growth. By implementing the recommended strategies, the company can diversify its revenue streams. Through a thoughtful and well-executed market entry plan, product localisation and strategic marketing efforts, the company can position itself as a reliable and preferred supplier in the Dutch glass industry. While challenges may arise, the potential benefits of market share, revenue growth, and brand recognition make the Dutch expansion strategic for GI. The company can capitalise on the opportunities presented by this expansion, contributing to its long-term success on an international scale.

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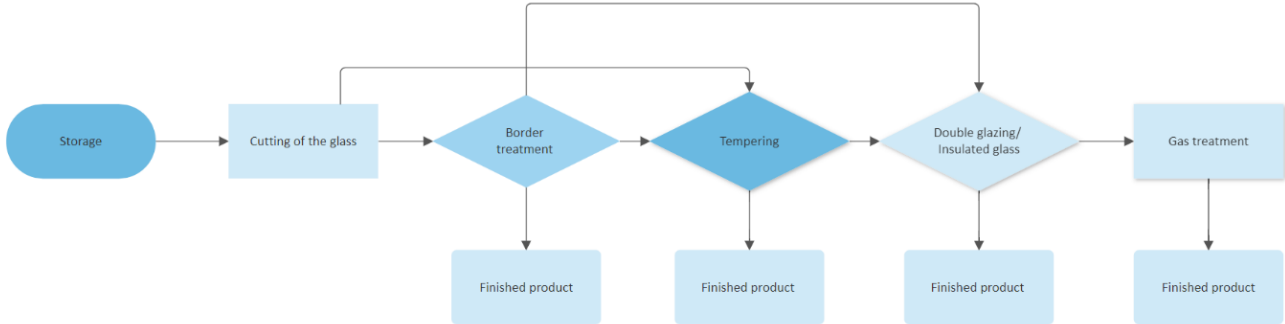
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**11. Appendixes**

**Appendix 1. Glass Production Process (back to [text](#))**



## Appendix 2. Business Model Canvas (back to [text](#))

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
<ul style="list-style-type: none"> <li>Great dependence on two suppliers: 1. Saint Gobain 2. Guardian Glass.</li> <li>Focus on sustainability with ORAE Glass – base glass with the world's lowest carbon footprint</li> </ul>	<ul style="list-style-type: none"> <li>Glass processing services (cutting, drilling and notching, edging)</li> <li>Technical consultancy</li> <li>Periodic reviews and audits of the management systems</li> </ul>	<ul style="list-style-type: none"> <li>Provide quality services and products with excellent value for money that meet and exceed customer requirements and expectations</li> <li>Known for their unwavering commitment and honoring the agreed terms</li> <li>Involvement, motivation and competence of all the company's employees and certified supplier</li> </ul>	<ul style="list-style-type: none"> <li>Interacts directly with customer and provide support at the start of the sale, during and after.</li> <li>Take advantage of the salespeople to create an initial contact and in their offices to assist customers that contact them via phone or email.</li> </ul>	<ul style="list-style-type: none"> <li>Glassit tends to sell mostly B2B and supply mid to large-size projects in the Portuguese market.</li> <li>Target group – construction companies and other types of companies specialized in installing windows and glass.</li> <li>Each target can be segmented by geographic position</li> </ul>
	Key Resources		Channels	
	<ul style="list-style-type: none"> <li>Human: Competent employees</li> <li>Physical: Factory of 4 million squared meters and machinery</li> <li>Intellectual: Registered brand and their image known for the commitment and quality of its products and services</li> </ul>		<ul style="list-style-type: none"> <li>Online: Social Media, company's Website.</li> <li>Offline: Conferences to present the company and create contacts with potential clients</li> <li>Sales force made up of 4 salespeople</li> </ul>	
Cost Structure		Revenue Streams		
<ul style="list-style-type: none"> <li>Supplier's payments</li> <li>Salaries</li> <li>Bank loan</li> </ul>		<ul style="list-style-type: none"> <li>Sale of goods (double-glazing, tempered glass and others).</li> </ul>		

## Appendix 3. Values (back to [text](#))

In the pursuit of internationalisation, a company's values play a pivotal role in shaping its strategy, culture, and relationships with stakeholders. Values guide decision-making, ethical conduct, and the overall company actions. Values refer to a company's fundamental beliefs. In other words, they refer to a company's principles that are right or wrong. Values help guide your organisation and help employees work better toward common goals. Some examples of shared company values include integrity, fairness and accountability. When planning an internationalisation, companies should take into consideration the following factors regarding their values:

**Adherence to Local Laws:** Values are the foundation for ethical behaviour, and compliance with local laws and regulations in foreign markets is crucial for successful internationalisation. Companies prioritising ethical conduct and legal compliance build trust with customers, partners, and government authorities.

**Respect for Diversity:** Values that promote respect for diversity and cultural sensitivity help companies navigate the complex landscape of global markets. An inclusive corporate culture fosters open-mindedness and an ability to adapt to diverse customs and traditions. Considering this regarding sales, marketing and communication with all stakeholders is also essential since a common practice in one country may not be well perceived in another.

**Social Responsibility and Sustainability** has been an emerging concern worldwide. Company values should emphasise environmental responsibility and lead to sustainable business practices. In some markets, ESG matters can be even more important and valued by stakeholders.

**Brand Credibility:** A strong brand reputation will bring customer trust and preference. It is essential to remember that a company's actions and practices in one country can significantly impact its brand image in other countries, both positively and negatively. Positive practices, such as ethical conduct, sustainability initiatives, and community engagement, can enhance the company's reputation globally, fostering trust and preference among consumers and stakeholders in various nations. Conversely, negative actions can swiftly damage the company's brand, leading to a loss of consumer trust and potential legal and financial repercussions. Therefore, international operations entail a risk of contamination, where the consequences of actions in one market can ripple through the entire global brand ecosystem.

GI is currently well known for its commitment and transparency with its customers. They are prudent with the terms and conditions they agree to with their customers because they understand that reputation is critical and non-compliance with their customers can devastate

their brand. This is a significant value that the company must safeguard both in domestic and international markets.

In conclusion, values are abstract principles and active drivers that shape every aspect of a company's actions. Values define the company's identity and serve as a guiding light that ensures the company's actions and interactions align with its mission and principles as it expands internationally.

**Appendix 4. Income Statement & Balance Sheet. Source: Company Official Data (back to [text](#))**

<b>Balance Sheet (€)</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Non-current assets</b>	<b>1 520 545</b>	<b>2 046 666</b>	<b>1 750 112</b>	<b>1 748 247</b>	<b>1 564 401</b>
Intangible assets	11 634	11 371	11 371	11 371	11 371
Tangible fixed assets	1 486 135	2 012 519	1 714 566	1 712 701	1 528 855
Other non-current assets	22 776	22 776	24 176	24 176	24 176
<b>Current assets</b>	<b>1 459 789</b>	<b>1 601 660</b>	<b>2 602 503</b>	<b>2 776 363</b>	<b>2 905 807</b>
Stock	165 948	166 603	166 934	235 600	127 482
Receivables	1 192 558	1 284 264	1 559 461	1 645 716	2 042 656
Other current assets	101 284	150 793	876 107	895 047	735 670
Of which cash and cash equivalent	81 929	133 507	853 533	869 524	667 555
<b>Total assets</b>	<b>2 980 334</b>	<b>3 648 326</b>	<b>4 352 615</b>	<b>4 524 610</b>	<b>4 470 208</b>
<b>Liabilities &amp; equity</b>					
<b>Shareholders funds</b>	<b>740 180</b>	<b>792 110</b>	<b>944 534</b>	<b>985 022</b>	<b>1 185 632</b>
Capital	99 760	99 760	99 760	99 760	99 760
Other shareholders funds	640 420	692 350	844 775	885 262	1 085 872
<b>Non-current liabilities</b>	<b>1 490 390</b>	<b>2 376 474</b>	<b>2 937 629</b>	<b>3 126 744</b>	<b>2 741 158</b>
Long term debt	1 350 872	1 968 201	2 383 957	2 571 747	2 160 847
Other non-current liabilities	139 518	408 273	553 672	554 997	580 311
Of which provisions	139 518	321 640	463 760	463 760	463 760
<b>Current liabilities</b>	<b>749 765</b>	<b>479 743</b>	<b>470 452</b>	<b>412 844</b>	<b>543 418</b>
Payable	580 468	383 507	332 771	292 949	444 644
Other current liabilities	169 297	96 236	137 681	119 895	98 774
<b>Total shareholders' funds &amp; liabilities</b>	<b>2 980 334</b>	<b>3 648 326</b>	<b>4 352 615</b>	<b>4 524 610</b>	<b>4 470 208</b>

**Appendix 5. Profitability Ratios (back to [text](#))**

<b>Profitability Ratios</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>EBITDA Margin</b>	9,32%	10,71%	13,19%	10,17%	11,64%
<b>EBIT</b>	1,61%	2,21%	5,43%	1,67%	4,77%
<b>ROA</b>	1,02%	1,42%	3,50%	0,89%	4,50%
<b>Profit Margin</b>	0,91%	1,35%	3,97%	1,02%	3,93%

## Appendix 6. Efficiency Ratios (back to [text](#))

Efficiency	2018	2019	2020	2021	2022
<b>Assets Turnover</b>	1,12x	1,16x	0,96x	0,9x	1,14x
<b>Average Holding Period</b> (days)	32,16	30,59	29,57	36,94	15,56
<b>Average Collections Period</b> (days)	129,50	122,30	148,17	150,60	145,89
<b>Average Payable Period</b> (days)	112,48	70,43	58,95	45,93	54,25
<b>Cash Conversion Cycle</b> (days)	49,17	82,47	118,79	141,60	107,19

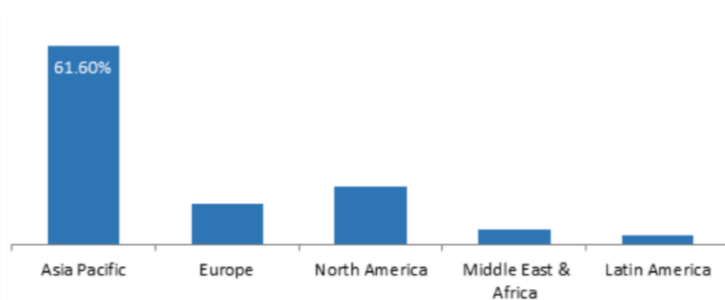
## Appendix 7. Liquidity Ratios (back to [text](#))

Liquidity Ratios	2018	2019	2020	2021	2022
<b>Current Ratio</b>	1,95	3,34	5,53	6,72	5,35
<b>Quick Ratio</b>	1,73	2,99	5,18	6,15	5,11
<b>Cash Ratio</b>	0,11	0,28	1,81	2,11	1,23
<b>Net Working Capital</b>	€710 025	€1 121 917	€2 132 051	€2 363 518	€2 362 389

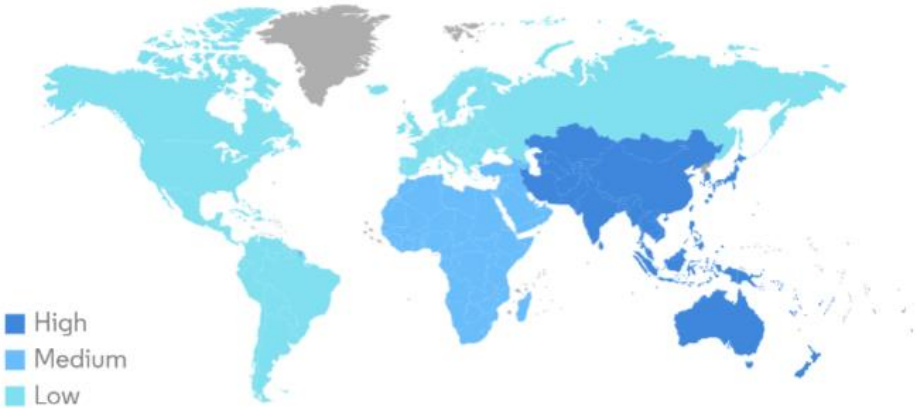
## Appendix 8. Worldwide Flat Glass Market Concentration (back to [text](#))



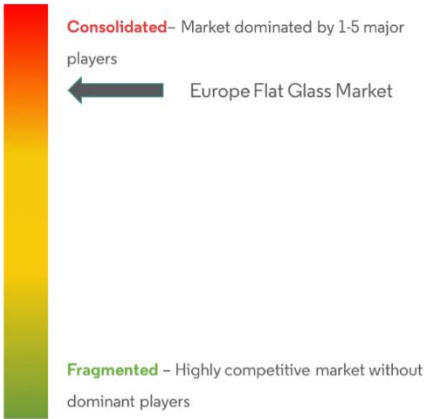
## Appendix 9. Global Flat Glass Market Value Share (%), By Region, 2021 (Coherent Market Insights, 2021) (back to [text](#))



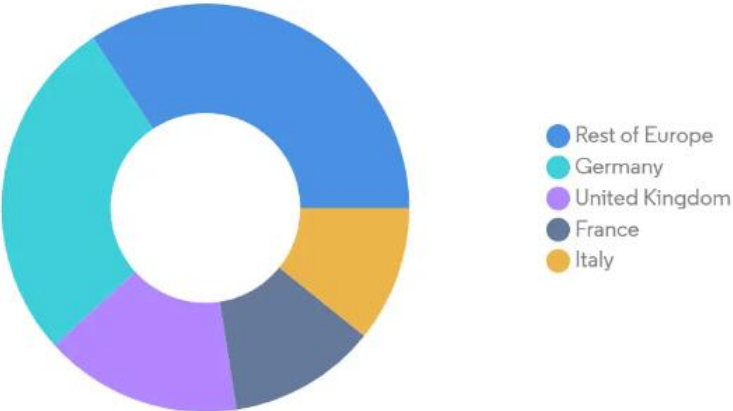
**Appendix 10. Flat Glass Market- Growth Rate by Region, 2022-2027 (back to [text](#))**



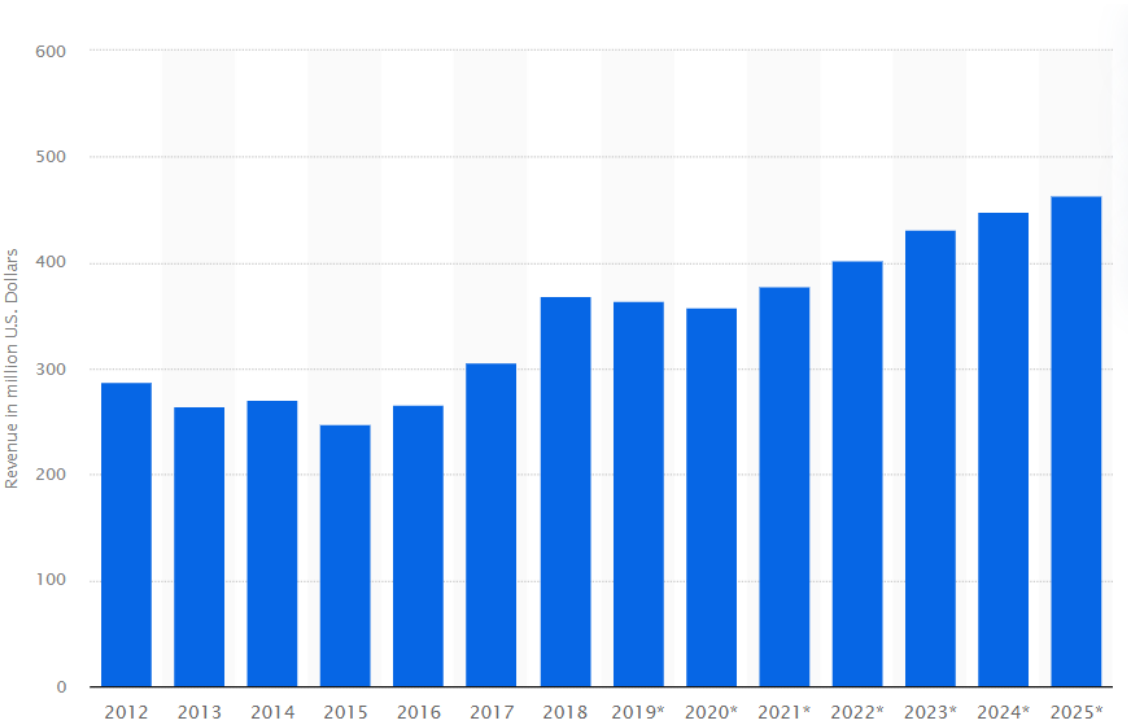
**Appendix 11. Europe Flat Glass Market Concentration (back to [text](#))**



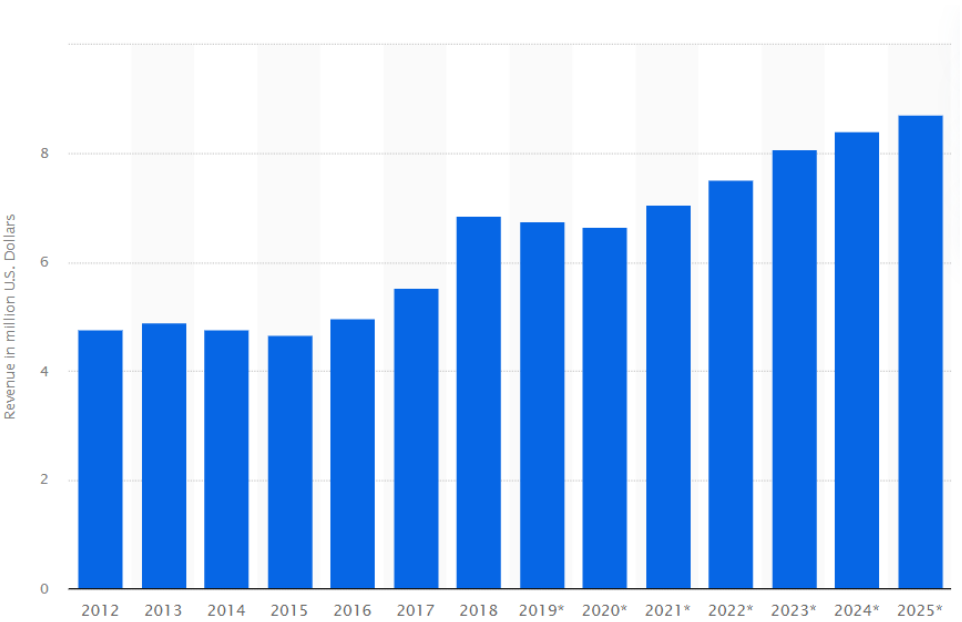
**Appendix 12. Flat Glass Market, Revenue Share (%), by Country, Europe, 2021 (back to [text](#))**



**Appendix 13. Industry revenue of “shaping and processing of flat glass” in Portugal 2012- 2025 (back to [text](#))**



**Appendix 14. Industry revenue of “manufacture of flat glass” in Portugal 2012- 2025 (back to [text](#))**



## Appendix 15. Top 20 companies Portugal 2022 (back to [text](#))

	Competition Glass Shaping & Processing Portugal, 2022	Op. Revnue	n° employees	Revenue per employee	EBITDA	EBITDA Margin	Net income	Profit margin (revenue)
1	VITROCHAVES	€26.459.730	154	€171.816	€4.616.328	17,4%	€2.640.132	9,98%
2	VIDRARIA MORTAGUA	€22.195.468	122	€181.930	€8.523.140	38,4%	€5.784.107	26,06%
3	COVIPOR - COMPANHIA VIDREIRA DO PORTO	€18.250.215	101	€180.695	€1.803.656	9,9%	€827.843	4,54%
4	MAXIVIDRO	€13.961.921	72	€193.916	€6.689.791	47,9%	€6.876.995	49,26%
5	VIDROMAX	€12.432.573	52	€239.088	€3.113.358	25,0%	€2.291.790	18,43%
6	CRISTALMAX	€11.779.333	84	€140.230	€2.346.312	19,9%	€1.472.898	12,50%
7	VIDROFORNENSE	€11.513.441	83	€138.716	€2.566.777	22,3%	€1.638.428	14,23%
8	VIDROS CEREJO	€10.762.114	46	€233.959	€2.397.248	22,3%	€1.418.897	13,18%
9	VIDREIRA ALGARVIA	€9.891.369	94	€105.227	€1.209.266	12,2%	€426.948	4,32%
10	NORTEMPERA	€9.527.838	55	€173.233	€1.659.705	17,4%	€1.025.969	10,77%
11	VIDRARIA DUJOCA	€6.956.560	32	€217.392	€2.060.709	29,6%	€1.664.570	23,93%
12	VIDRARIA DA POVOA	€6.727.618	37	€181.828	€1.415.006	21,0%	€833.083	12,38%
13	VIDROTORRE	€5.998.329	40	€149.958	€698.086	11,6%	€399.775	6,66%
14	BISELARTE	€5.865.029	64	€91.641	€946.957	16,1%	€482.182	8,22%
15	VIDRARIA DOS PEOES MAIA & FILHOS	€5.507.029	60	€91.784	€1.113.561	20,2%	€590.973	10,73%
16	VIDRARIA ARMANDO	€5.469.789	58	€94.307	€1.405.324	25,7%	€666.379	12,18%
17	VITROCELOS VIDRARIA	€5.220.906	40	€130.523	€840.498	16,1%	€543.397	10,41%
18	(GI): VIDRARIA BRACARENSE	€5.094.684	42	€121.302	€594.958	11,7%	€201.016	3,95%
19	VIDRARIA FOCO	€4.582.891	40	€114.572	€959.012	20,9%	€601.967	13,14%
20	VITROPOR	€4.217.348	42	€100.413	€540.784	12,8%	€261.366	6,20%

## Appendix 16. Top 20 GI's industry - Types of glass (back to [text](#))

Types of glass	VITROCHAVES	VIDRARIA MORTAGUA	COVIPOR	MAXIVIDRO	VIDROMAX	CRISTALMAX	VIDROFORNENSE	VIDROS CEREJO	VIDREIRA ALGARVIA	NORTEMPERA	VIDRARIA DUJOCA	VIDRARIA DA POVOA	VIDROTORRE	BISELARTE	VIDRARIA DOS PEOES	VIDRARIA ARMANDO	VITROCELOS VIDRARIA	VIDRARIA BRACARENSE	VIDRARIA FOCO	VITROPOR	Total
Laminated	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	19
Tempered	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	19
Insulated	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	19
Double	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	19
Triple	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	14
Screen-printed	Yes	Yes	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	13
Thermoset	Yes	No	Yes	Yes	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes	No	Yes	No	Yes	Yes	10
Bullet resistant	Yes	No	No	Yes	Yes	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No	Yes	Yes	No	9
Mirrored	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	No	8
Curved	No	No	No	Yes	Yes	No	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes	Yes	No	6
Fireproof	Yes	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	Yes	No	5
<b>Total</b>	<b>9</b>	<b>6</b>	<b>7</b>	<b>9</b>	<b>9</b>	<b>5</b>	<b>8</b>	<b>4</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>8</b>	<b>6</b>	<b>2</b>	<b>6</b>	<b>8</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>7</b>	

**Appendix 17. Sample of top 20 GI's industry - Maximum measurements (back to [text](#))**

Maximum measurements (in meters)	VIDRARIA MORTAGUA	MAXIVIDRO	VIDROFORNENSE	VIDRARIA BRACARENSE	VITROPOR
Laminated	N/A	N/A	N/A	6x3.21	6x3.21
Tempered	7.2x3.33	N/A	N/A	3.8x2.35	4.2x2.4
Insulated	7.2x3.21	9x3.21	5.1x2.7	3.8x2.7	5x2.5
Double	7.2x3.21	9x3.21	5.1x2.7	3.8x2.7	5x2.5
Triple	7.2x3.21	N/A	N/A	3.8x2.7	5x2.5
Screen-printed	4.5x2.5	N/A	N/A	N/A	2.9x1.8
Thermoset	N/A	N/A	N/A	N/A	4.2x2.4
Bullet resistant	N/A	N/A	N/A	6x3.21	N/A
Mirrored	N/A	N/A	N/A	6x3.21	N/A
Curved	N/A	3x3.2	N/A	N/A	N/A
Fireproof	N/A	N/A	N/A	N/A	N/A

**Appendix 18. GI's resources (back to [text](#))**

Resources		
Tangible Resources	Intangible Resources	Human Resources
Physical	Intellectual	
Facilities, equipment and machinery, inventory	Registered brand name and reputation of commitment and quality, customer loyalty and culture of familiar company	Employee's skills, experience and competence

**Appendix 19. GI's capabilities (back to [text](#))**

<b>Capabilities</b>	<b>Description</b>
<b>Technical consultancy</b>	Planning and support in prescribing glass solutions for the most diverse purposes.
<b>Selection of glass's suppliers</b>	6 criteria are considered to choose suppliers and deliver the best glass to the costumer
<b>Long-stading experience</b>	Long experience in the glass market
<b>Quality control system</b>	With continuous improvement and effectiveness to adapt products to consumer's needs
<b>Fully automatized glass process</b>	To produce high quality glass efficiently
<b>Variety of product portfolio</b>	Offer different product for different needs
<b>Technical assistance</b>	Replacement and maintenance service
<b>Installation of the glass</b>	Technicians with experience and adequate equipment in the assembly of glass

## Appendix 20. VRIO Analysis (back to [text](#))

	Valuable	Rare	Immitable	Organization	Competitive implications
<b>Resources</b>					
<b>GI's facilities</b>	Yes	No	No	No	Competitive Parity
<b>Equipment and machinery</b>	Yes	No	No	No	Competitive Parity
<b>Inventory</b>	Yes	No	No	No	Competitive Parity
<b>Brand name and reputation</b>	Yes	No	No	No	Competitive Parity
<b>Customer loyalty</b>	Yes	No	No	No	Competitive Parity
<b>Cultural of familiar company</b>	Yes	No	No	No	Competitive Parity
<b>Capabilities</b>					
<b>Technical consultancy</b>	Yes	No	No	No	Competitive Parity
<b>Selection of glass's suppliers</b>	Yes	No	No	No	Competitive Parity
<b>Long-standing experience</b>	Yes	No	No	No	Competitive Parity
<b>Quality control system</b>	Yes	No	No	No	Competitive Parity
<b>Fully automatized glass process</b>	Yes	No	No	No	Competitive Parity
<b>Variety of product portfolio</b>	Yes	No	No	No	Competitive Parity
<b>Technical system</b>	Yes	No	No	No	Competitive Parity
<b>Installation of glass</b>	Yes	No	No	No	Competitive Parity

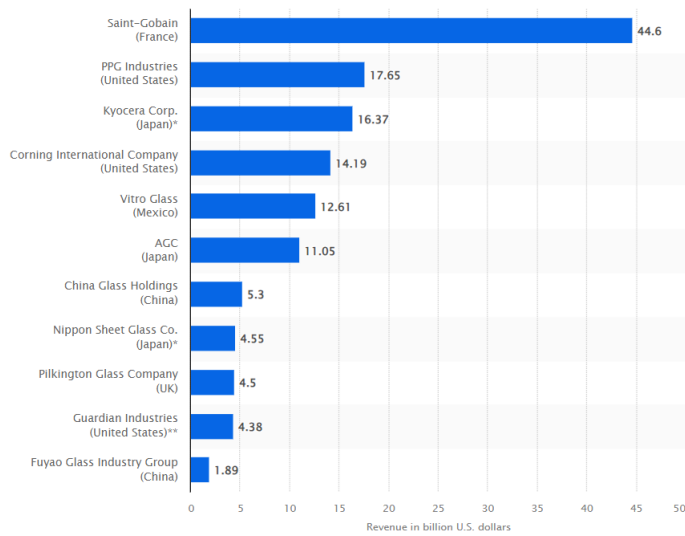
## Appendix 21. SWOT Analysis Table (back to [text](#))

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Experience</li> <li>• Efficient planning</li> <li>• Strong quality policy</li> <li>• Proficient capital</li> <li>• Commitment reputation</li> <li>• Good financial results- profit notable increase due to revenue</li> </ul>	<ul style="list-style-type: none"> <li>• Low commercial effort</li> <li>• Insufficient capacity</li> <li>• Product/Service limitations</li> <li>• Supplier dependency</li> <li>• Lack of international experience and presence</li> <li>• Insufficient company structure</li> <li>• Low market share</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Sustainability</li> <li>• Facility Expansion</li> <li>• Extend GI's global reach</li> <li>• Partnership with instalment firms</li> <li>• Enhance online profile/presence</li> <li>• Government subsidies</li> <li>• Customer loyalty</li> </ul>	<ul style="list-style-type: none"> <li>• Few suppliers</li> <li>• High competition</li> <li>• Lack of market differentiation</li> <li>• International regulatory challenges</li> <li>• Cultural barriers</li> <li>• Size Demands</li> <li>• National dependency</li> </ul>

## Appendix 22. Top 20 GI's industry - Suppliers (back to [text](#))

Suppliers	VITROCHAVES	VIDRARIA MORTAGUA	COVIPOR	MAXIVIDRO	VIDROMAX	CRISTALMAX	VIDROFORNENSE	VIDROS CEREJO	VIDREIRA ALGARVIA	NORTEMPERA	VIDRARIA DUJOCA	VIDRARIA DA POVOA	VIDROTORRE	BISELARTE	VIDRARIA DOS PEDES	VIDRARIA ARMANDO	VITROCELOS VIDRARIA	VIDRARIA BRACARENSE	VIDRARIA FOCO	VITROFOR	Total	%
Saint Gobain	No	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	N/A	Yes	N/A	N/A	Yes	N/A	N/A	11	78,57%
Guardian Glass	No	No	N/A	No	No	Yes	Yes	No	No	No	Yes	Yes	Yes	N/A	No	N/A	N/A	Yes	N/A	N/A	6	42,86%
Pyroguard	Yes	No	N/A	No	No	Yes	No	No	No	No	No	No	No	N/A	No	N/A	N/A	No	N/A	N/A	2	14,29%
SunBell	No	No	N/A	No	No	Yes	No	No	No	No	No	No	No	N/A	No	N/A	N/A	No	N/A	N/A	1	7,14%
Dream Glass Group	No	No	N/A	No	No	Yes	No	No	No	No	No	No	No	N/A	No	N/A	N/A	No	N/A	N/A	1	7,14%
AGC	No	No	N/A	No	No	No	Yes	No	No	No	No	No	No	N/A	No	N/A	N/A	No	N/A	N/A	1	7,14%

**Appendix 23. Leading glass manufacturers worldwide based on revenue in 2022 (back to [text](#))**



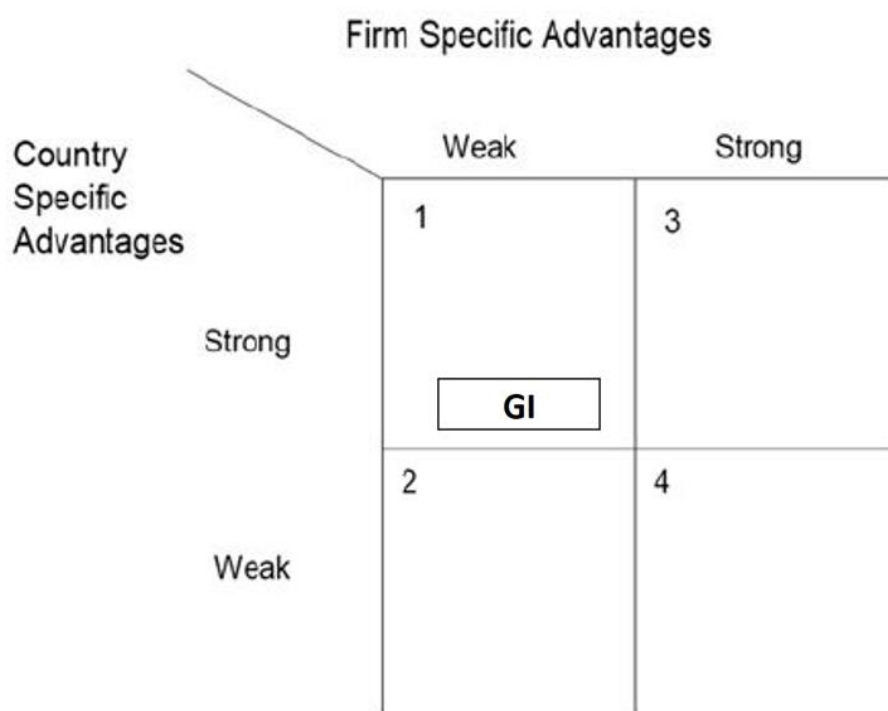
**Appendix 24. Top 20 GI's industry - Certificates (back to [text](#))**

Certificates	VITROCHAVES	VIDRARIA MORTAGUA	COVIPOR	MAXIVIDRO	VIDROMAX	CRISTALMAX	VIDROFORNENSE	VIDROS CEREJO	VIDREIRA ALGARVIA	NORTEPERA	VIDRARIA DUJOCA	VIDRARIA DA POVOA	VIDROTORRE	BISELARTE	VIDRARIA DOS PEÕES	VIDRARIA ARMANDO	VITROCELOS VIDRARIA	VIDRARIA BRACARENSE	VIDRARIA FOCO	VITROPOR	Total	
CE	Yes	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	19
ISO 9001	Yes	Yes	N/A	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	15
Insulated	Yes	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	Yes	No	No	14
IPAC	Yes	Yes	N/A	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	No	No	Yes	Yes	No	No	11
Climalit	No	Yes	N/A	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No	Yes	No	No	No	10
SGS	No	Yes	N/A	Yes	Yes	No	No	No	No	No	Yes	No	Yes	Yes	Yes	No	No	Yes	No	No	No	8
Cekal	Yes	No	N/A	Yes	Yes	Yes	No	No	No	Yes	No	No	No	No	No	No	No	Yes	No	No	No	6
Laminated	Yes	Yes	N/A	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	3
Tempered	Yes	Yes	N/A	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	3
HST	No	No	N/A	No	No	No	No	No	Yes	No	Yes	No	No	No	No	No	No	No	No	No	No	2
Thermoset	Yes	No	N/A	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	2
ISO 14001	No	No	N/A	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1
Compete 2020	Yes	Yes	N/A	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	6
Centro 2020	No	Yes	N/A	Yes	No	No	No	Yes	No	No	Yes	No	No	Yes	No	No	No	No	No	No	No	5
Norte 2020	Yes	No	N/A	No	No	No	No	No	No	No	No	No	Yes	No	Yes	No	Yes	No	No	Yes	Yes	5
PME Líder	Yes	No	N/A	No	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	10
PME Excelência	No	No	N/A	No	No	No	No	No	No	No	No	No	No	No	Yes	No	Yes	No	Yes	Yes	Yes	4
<b>Total</b>	<b>11</b>	<b>10</b>	<b>N/A</b>	<b>9</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>8</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>9</b>	<b>2</b>	<b>4</b>	<b>7</b>	<b>6</b>	<b>5</b>		

**Appendix 25. Certificates definition (back to [text](#))**

Certificate	Description
CE	A marking that permits determined goods to circulate freely within the European Union because these follow the Construction Products Regulation of the Parliament of Europe and the Council (Your Europe, 2023).
ISO 9001, Cekal Insulated and IPAC/SGS Certif for Insulated, Laminated, Tempered and Thermoset	Ensure the quality of the correspondent firms' products after these respected the necessary requisites.
Climalit	A brand/network of Saint-Gobain is considered a certificate by checking biannually products in accordance (Vidreira Algarvia, 2023).
HST management system	A certificate that focuses on health and safety issues to enhance employee satisfaction and ensure a secure workplace (Vidraria Dujoca, 2023).
ISO 14001	A document that showcases that a firm is compromised to achieve adequate environmental performance (APCER, 2023).
Compete 2020	A program that applies the European Structural and Investment Funds between 2014 and 2020 in the competitiveness and internationalisation of Portugal.
Centro 2020 and Norte 2020	Utilise each of their respective fund in its region of Portugal.
PME Líder and PME Excelência	Premiums assigned to companies that displayed a superior performance profile, providing notoriety and prestige (IAPMEI, 2023).

**Appendix 26. FSA-CSA Matrix (back to [text](#))**



## **Appendix 27. Inorganic Growth, in-depth analysis (back to [text](#))**

**Merger and Acquisition (M&A):** Companies can achieve inorganic growth by acquiring or merging with another company. This can result in gaining access to a new technology, product, or customer segment or expanding to new markets and increasing market share. Inorganic growth often stems from a strategic decision to achieve cost leadership or differentiation and can be achieved by doing a Vertical or Horizontal M&A. With Vertical M&A, firms integrate with companies at different stages of the supply chain, whereas in Horizontal M&A, firms integrate with competitors in the same market. However, the feasibility of such a strategy is contingent on many factors, including carefully considering the buyer's financial resources.

**Partial Acquisitions:** Involve purchasing only a part of the target company's equity. This strategy has the potential benefit of risk sharing since the buyer is sharing the risk but also the rewards with the target company; however, it can imply limited control (especially if the buyer is a minority shareholder), which can impact the decisions and direction of the target company and potentially lead to conflicts.

Upon choosing the right partner for an Acquisition or a Merger, it is essential to consider several factors of the target like its cultural fit, access to new markets, whether it is a complementary or adjacent business, potential synergies (cost and revenue side), dependency on the people and the owner, willingness to sell and due diligence. In this case, GI shouldn't consider a vertical M&A since, on the one hand, there are few but substantial producers with excellent customer loyalty, making it impossible for the company to acquire the leading players in the industry and not that relevant to acquire a small producer because clients ask specifically for the products of the top players. On the other hand, acquiring, for example, a construction or assembly company to install the glass would increase GI's service offerings and push towards differentiation, which is not in line with the company's strategy of pursuing cost leadership. Therefore, the only viable

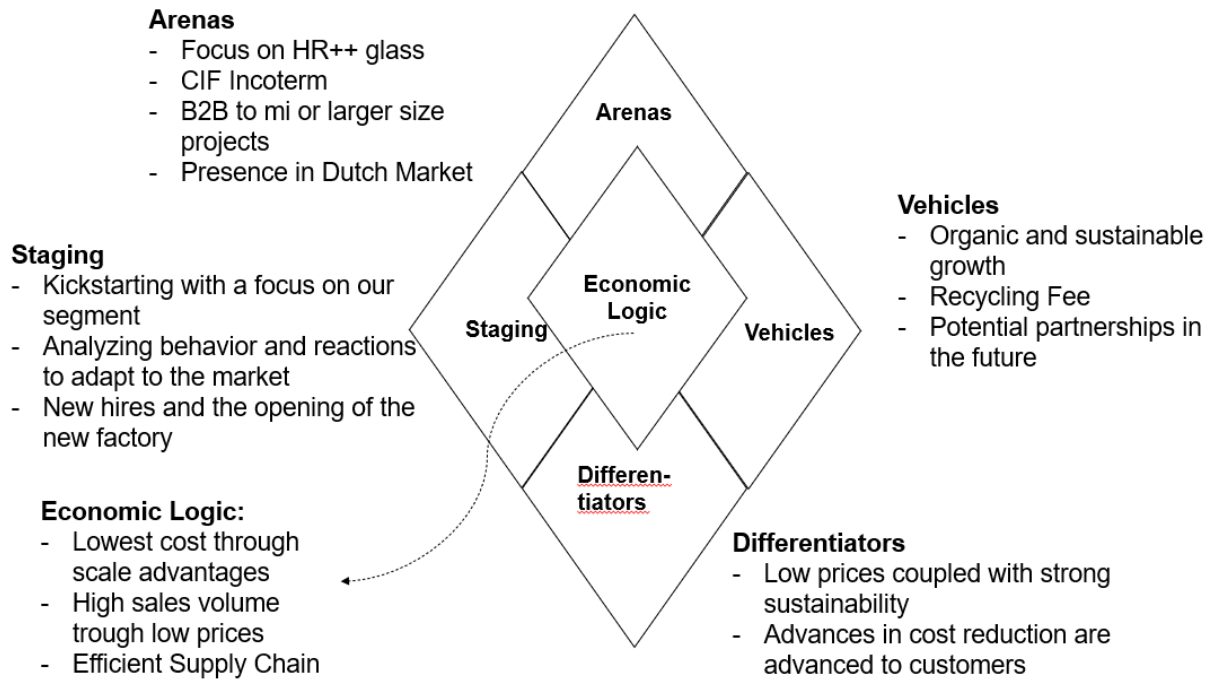
option would be a horizontal merger, which is acquiring a company operating in the same value chain stage as GI but in a different market.

Nevertheless, according to our analysis, GI doesn't have many financial resources, even compared to its competitors in the domestic market. A complete acquisition can demand significant financial resources, which may strain GI's budget or push them into contracting a staggering amount of debt. Given the limited resources and unfamiliarity with external markets, thorough due diligence becomes even more critical to minimise the associated risks. Consequently, it is not realistic for GI to pursue this strategy in the short term.

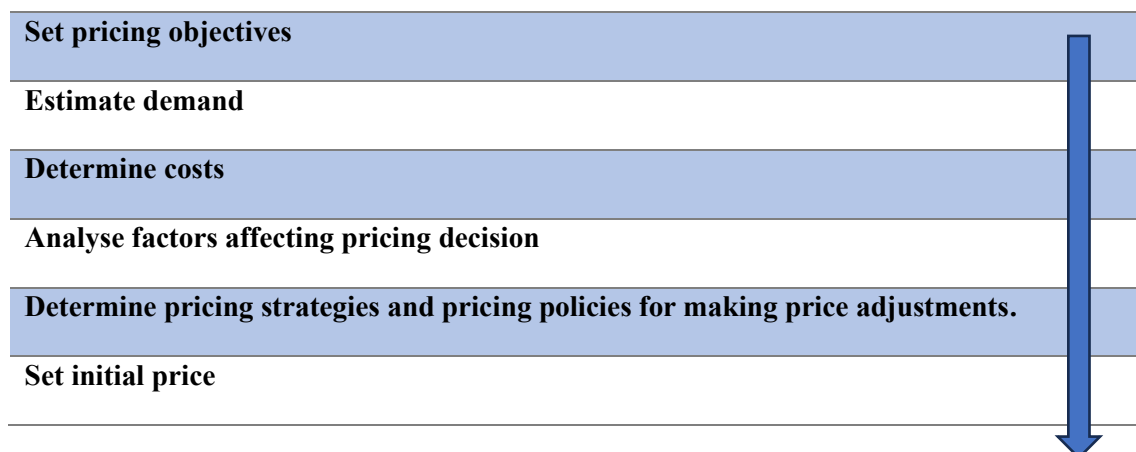
**Joint Ventures and Partnerships:** Businesses can form strategic partnerships or joint ventures to combine efforts and expertise to develop new products, enter new markets, or improve operational efficiencies. One practical example where GI can establish a partnership is with a material/construction national company that also wants to operate in the same market and can jointly combine their commercial efforts, only hiring one sales agent to be on the field that would represent both brands could lead to cross-selling and would ultimately reduce the financial effort and share risk with the partner. Another option is, for example, a distribution partnership that GI could establish with local distributors or retailers in the chosen target market, potentially increasing its product availability.

Other strategies to achieve inorganic growth exist, like Licensing, franchising, or **Strategic Alliances**. The first involves companies licensing their technology or brand to other companies or franchises. The latter typically involves agreements with other businesses (suppliers, customers, or competitors) to gain access to new markets, share knowledge and resources, and reduce costs. For example, GI might enter a strategic alliance with a glass manufacturer in a target market to ensure a steady supply. However, these options are less aligned with the specific characteristics of this industry and GI's goals.

## Appendix 28. Strategy Diamond (back to [text](#))



## Appendix 29. Price Determination (back to [text](#))



**Offer and make price adjustments as needed.**

### Appendix 30. Types of market entry- advantages and disadvantages (back to [text](#))

Type of Export	Advantages	Disadvantages
<b>Direct Export</b>	<ul style="list-style-type: none"> <li>- Greater control over the sales process</li> <li>- Direct customer contact</li> <li>- Higher profit margins</li> </ul>	<ul style="list-style-type: none"> <li>- Investment of time and staff</li> <li>- Limited market coverage</li> <li>- Insufficient knowledge of the market and culture</li> </ul>
<b>Indirect Export</b>	<ul style="list-style-type: none"> <li>- No or very few extra staff required</li> <li>- More complete market coverage possible</li> </ul>	<ul style="list-style-type: none"> <li>- Lower profit margins</li> <li>- Dependence on the commitment of the intermediary</li> <li>- No direct customer contact</li> <li>- Financial risks</li> </ul>
<b>Co-operative</b>	<ul style="list-style-type: none"> <li>- Collaborative agreements with other firms</li> <li>- Leverages expertise and networks of local partner</li> </ul>	<ul style="list-style-type: none"> <li>- Requires clear roles, responsibilities, and expectations in a comprehensive agreement</li> <li>- Dependence on the commitment of the partner</li> </ul>
<b>Countertrade</b>	<ul style="list-style-type: none"> <li>- Mitigates financial constraints</li> <li>- Reciprocal trading arrangements</li> </ul>	<ul style="list-style-type: none"> <li>- Requires detailed negotiations and legal considerations</li> <li>- Requires a clear understanding of market dynamics</li> </ul>

### Appendix 31. Dutch companies that use glass (back to [text](#))

Company's name	Website	Main function
<b>Blitta</b>	<a href="https://blitta.nl/en/">https://blitta.nl/en/</a>	Solutions in the design and construction of façade structures.
<b>De Groot &amp; visser</b>	<a href="https://degrootenvisser.nl/">https://degrootenvisser.nl/</a>	Responsible for completing the facades construction process.
<b>Alkondor -</b>	<a href="https://www.alkondor.nl/">https://www.alkondor.nl/</a>	Expertise in the engineering, equipment and installation of the entire facade.

<b>Intal -</b>	<a href="https://www.intal.nl/nl-nl">https://www.intal.nl/nl-nl</a>	Builder of house systems and facades of aluminium frames and curtain walls.
<b>TGM gevel</b>	<a href="https://www.tgm-facades.co.uk/">https://www.tgm-facades.co.uk/</a>	Create facades using smart methods for a smooth construction process.

### Appendix 32. Average hourly labour cost (in euros) in the EU in 2022 (back to [text](#))

