Development of a Business Model for a Store Concept in a Glass Industry Company

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Master's Dissertation

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Abstract

The present dissertation focuses on the development of an innovative business model for a store concept in the glass industry. Traditionally, industries only cater to bulk order demands. However, having a service that addresses small quantities needs, enables businesses to gain competitive advantage, establishing a closer relation with customers. This approach allows for enhanced customer satisfaction and an improved position in the market.

This thesis was developed in a curricular internship at BA Glass, in the Business Development department, regarding the master in Mechanical Engineering at Faculdade de Engenharia da Universidade do Porto. The main goal was to re-think and re-design the current process of selling small quantities to businesses, with the goal of implementing and promoting the channel as a B2B and a B2C platform.

Firstly, a daily follow-up of the store's operations was done, by shadowing the teams operations and observing their activities. This allowed for a better understanding of the current purchase process, as well as the main bottlenecks that needed to be addressed. Moreover, data was collected from the company's ERP and further analyzed, with the aim of assessing the current state of the store. This allowed to identify potential areas of improvement and opportunities for enhancement. By closely monitoring the operations, valuable insights were collected, laying the foundation for optimizing the process and streamlining operations, while developing a more efficient and customer focused business model.

The developed model explains in detail the most relevant aspects such as the value proposition and message it intends to communicate, the target customer segments, channels of distribution, identifying strengths to differentiate from competitors, marketing strategies and projecting the financial situation for the next five years, in order to assess the viability of investing in the new project.

Parallel to the development of the business model, some actions were undertaken with the aim of enhancing the current store operations and environment.

Focusing on the long-term vision for the business, while outlining immediate improvements, aimed to create a solid foundation for sustainable growth and increased customer satisfaction.

Resumo

Desenvolvimento de um Modelo de Negócios para um Conceito de Loja numa Empresa da Indústria Vidreira

A presente dissertação centra-se no desenvolvimento de um modelo de negócio inovador para um conceito de loja no sector do vidro. Tradicionalmente, as indústrias apenas atendem a pedidos de grandes quantidades. No entanto, a existência de um serviço que responda às necessidades de pequenas quantidades, permite às empresas ganhar vantagem competitiva, estabelecendo uma relação mais próxima com os clientes. Esta abordagem permite uma maior satisfação do cliente e uma melhor posição no mercado.

Esta tese foi desenvolvida no âmbito de um estágio curricular na BA Glass, no departamento de Business Development, integrado no mestrado em Engenharia Mecânica da Faculdade de Engenharia da Universidade do Porto. O principal objetivo foi repensar e redesenhar o atual processo de venda de pequenas quantidades a empresas, com o intuito de implementar e promover o canal como uma plataforma B2B e B2C.

Em primeiro lugar, foi feito um acompanhamento diário das operações da loja, acompanhando as operações das equipas e observando as suas actividades. Isto permitiu uma melhor compreensão do processo de compra atual, bem como dos principais pontos críticos que precisavam de ser resolvidos. Além disso, foram recolhidos dados do ERP da empresa e posteriormente analisados, com o objetivo de avaliar o estado atual da loja. Isto permitiu identificar potenciais áreas de melhoria e oportunidades de aperfeiçoamento. Ao monitorizar de perto as operações, foram recolhidas informações valiosas, que serviram de base para a otimização do processo e a simplificação das operações, ao mesmo tempo que se desenvolvia um modelo de negócio mais eficiente e centrado no cliente.

O modelo desenvolvido explica em pormenor os aspectos mais relevantes, tais como a proposta de valor e a mensagem que pretende comunicar, os segmentos de clientes-alvo, os canais de distribuição, a identificação dos pontos fortes para diferenciação dos concorrentes, as estratégias de marketing e a projeção da situação financeira para os próximos cinco anos, a fim de avaliar a viabilidade de investir no novo projeto.

Paralelamente ao desenvolvimento do modelo de negócio, foram aplicadas algumas acções com o objetivo de melhorar as operações e o ambiente atual da loja.

A focalização na visão a longo prazo do negócio, ao mesmo tempo que se delineavam melhorias imediatas, tinha como objetivo criar uma base sólida para um crescimento sustentável e uma maior satisfação dos clientes.

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Last but not least, to my brother, to whom I dedicate this work.

Bárbara

“

I shall be telling this with a sigh
Somewhere ages and ages hence:
Two roads diverged in a wood, and I—
I took the one less traveled by,
And that has made all the difference. ”

Robert Frost

Contents

Acronyms and Symbols

B2B	Business-to-Business
B2C	Business-to-Consumer
CAGR	Compound Annual Growth Rate
DIY	Do-It-Yourself
EDI	Electronic Data Interchange
ERP	Enterprise Resource Planning
ICT	Information and Communications Technology
IRR	Interal Rate of Return
IT	Information Technology
NPV	Net Present Value
PI	Profitability Index
QR	Quick Response
SAP	Systems, Applications and Products
SWOT	Strenghts, Weaknesses, Opportunities and Threats
TIR	Transports Internationaux Routiers
WACC	Weighted Average Cost of Capital
WWW	World Wide Web

List of Figures

List of Tables

Chapter 1

Introduction

In order to gain competitive advantage, companies need to be constantly aiming for innovation in order to differentiate themselves from their competitors. To do this, it is important to keep customers as the main focus, ensuring the delivery of a unique proposition value. This does not mean having new products or services, but instead improving the way these reach and are delivered to their target.

Industrial companies often focus on customers with high quantity demands, being unable to reach clients of small quantities needs, who usually need to satisfy their requirements in distributors and not in manufacturers. A company that is able to satisfy both types of customers, providing different solutions for different businesses, is able to set itself apart in the market, reaching different customer segments.

This dissertation entitled "Development of a business model for a store concept in a glass industry company" was developed within the scope of the Master in Production Management, part of the Mechanical Engineering course at Faculdade de Engenharia da Universidade do Porto. The project was developed during an internship of 18 weeks in BA Glass, inside the department of Business Development, and intends to help in re-communicating a sales channel to satisfy clients of lesser quantities.

1.1 BA Glass presentation

BA Glass is one of the largest producers in Europe of glass containers for the food and beverage sector. “Barbosa e Almeida” was incorporated in 1912 and was dedicated to the commercialization of bottles. In 1930, BA began its industrial activity in Campanhã (Porto) with semi-automatic technology, changing its name to “Fábrica de Vidros Barbosa e Almeida, Lda”. Afterwards, in 1969 the operations of the new industrial unit located in Avintes began with two regenerative furnaces allowing for heat recovery, instead of the traditional method that consisted in melting raw materials. In 1987 the company was listed in the Lisbon Stock Exchange and a year later increased its capacity by 40% with the construction of a new furnace, establishing its leadership in Portugal in the manufacturing of glass packaging. In 1993 BA acquired 94,5% of the state-owned enterprise “CIVE – Companhia Industrial Vidreira, SA”, which had three furnaces and is based in Marinha Grande. In 1998 BA continued expanding, incorporating the Spanish company “BA – Fabrica de Envases de Vidrio Barbosa y Almeida, SA” and establishing a new factory with one furnace based in Villafranca de los Barros. A year later “Vidriera Leonesa, SA” in Léon was acquired, a company with an industrial unit with two furnaces. In 2008 BA was able to expand its client base and product line to encompass the pharmaceutical and cosmetic industries, through the acquisition of the Sotancro Group. Later in 2012 the company started its expansion outside the Iberian Peninsula by acquiring the Polish group “Warta glass”. This represented a step forward into the group internalization and expansion into the Eastern Europe Market. BA expanded its market into the Central Europe in 2016 when it acquired HNG Global, a German glass packaging company, which allowed the improvement of the service to the international customer base and a better understanding of the market. Later, in 2017, Yioula Group was acquired consisting of 4 plants in Athens, Sofia, Plovdiv and Bucharest.

Nowadays, BA Glass is present in 7 countries, with a total of 12 plants and around 3700 employees. The company produces over 9 billion containers annually, distributing glass packaging to more than 60 countries around the world. All products are inspected in the factories by modern automatic inspection machines to verify the physical and dimensional characteristics. In addition to this, laboratory tests are also performed in order to control factors such as resistance to heat and pressure, capacity and others.

Moreover, BA has been committed in the last years to a sustainable growth. As a proof of this, the company won, in 2020, the award of “The most sustainable company in the glass industry” by World Finance. This award comes from the company’s usage of renewable energy, reduction of gas, water usage and CO2 emissions, and for the support given to its customers in reducing packaging.

Due to these efforts, BA has established itself as a reference supplier in the food and beverage industries, outstanding due to the product’s quality and the innovative and flexible solutions. [1]

1.2 Motivation and Aim of the Project

The modern world is presenting new challenges to businesses. Nowadays, having a competitive advantage means being able to use the company’s resources in the most effective way in order to respond to market trends and needs, while seizing opportunities that appear. Businesses are changing and becoming more market oriented as a result of the high market demand and diversity, which encourages companies to adopt differentiation strategies (Rua and Santos, 2022).

Finding innovative approaches and adding value is essential for creating competitive businesses. A strong strategy can help organizations in coming up with fresh concepts, carrying out trials and opening doors for market entry (Farida and Setiawan, 2022).

[1] See `https://baglass.com/en/history.php`. Accessed on 2023-02-15 at 3 P.M.

BA Store exists in Avintes for over 40 years and its purpose is to sell small quantities to clients, being the maximum purchase of a full truck. As BA Glass grew and expanded in the last years, the store did not receive due importance, ending up not evolving with the company and not changing its operations over time. However, it is now clear that the store is a sales channel that is a clear opportunity for BA Glass to increase sales and, most important, to stand out from other glass industries. Opportunities such as the increase of online sales since the Covid-19 pandemic, having production in house and being able to collect research data from an online platform are encouragements to develop a new business model for this store, which is the main goal of this work. By re-thinking and re-designing the store, BA Glass intends to distinguish itself in the market with an outstanding solution and service for small quantities needs.

1.3 Project Goals

BA Store has the aim of selling orders of small quantities to the local market in Portugal and Spain, being the north of Portugal the market with the highest engagement, since the store has a business model relying solely in a physical store located in Avintes. The store has old facilities and outdated operations, not being suitable to the current market. Due to this, the main goal of this project is to re-think, re-design and re-communicate this platform, having in mind an investment plan. To achieve this, some specific milestones were defined:

- Familiarization with the current process and reality of the store;
- Collection of the important variables in the process;
- Identifying data required to develop the new business plan and model;
- Studying some digital solution;
- Building the proposal for the new business model.

1.4 Project Contributions

Through the literature review, this project aims to contribute by providing a comprehensive overview of the topic of electronic commerce, mainly focusing on the types of e-commerce available nowadays, its impacts and benefits in businesses in the current era of globalization and emphasizing why there is a need to adapt the business models in order to include an online presence. These are valuable insights for an external audience, but also for the company itself, giving support and foundation to the need of investing in digital solutions for the current BA Store. Additionally, the main elements of a business plan are explained, aiming to give clarity to what are the main areas that need to be explored, when a business plan and model is being developed.

Moreover, by mapping out the As-Is situation, the company was able to gain better insights into what the current state of the store was, providing a clear picture of the opportunities of improvement. Besides this, the development of the new business model aims to boost sales, increasing revenues, but, most importantly, helps BA Glass distinguishing itself from direct competitors, by creating a modern sales channel that has the power of connecting the company directly with not only businesses but also end-consumers, engaging with them. Moreover, it creates a flexible and easy-to-use solution for businesses or consumers that have small quantities needs.

1.5 Methodology

The initial stage of the internship was devoted to understanding the existing state of the project (As-Is), with the aim of comprehending the main bottlenecks of the store's current operations. To achieve this, a week was spent in the store, dedicated to on-site observation, with the goal of shadowing the operations team in order to closely follow the purchasing process, examining customer interactions, and tracking the operations team in the warehouse to understand its layout. Moreover, analysis were performed through the extraction of data from the company's ERP SAP, that was then processed in order to obtain valuable insights regarding the store's present condition.

After mapping out the As-Is state, the new business model started being developed. In order to do this, the first important step was to define the store's new target, since it facilitated the creation of strategies. Due to the new business model touching upon various areas such as pricing, transportation, marketing, sales, among others, then sessions were held with different departments, with the aim of gaining valuable insights into what analysis should be performed. Moreover, it was crucial to perform a benchmark of competitors to better comprehend the current state of the market. Through the different outputs obtained, and having in mind the current condition of the store, its strengths and weaknesses, the best and most relevant strategies were defined and a new business model was created, addressing the need of investing in different areas.

1.6 Dissertation Structure

This dissertation consists of five chapters. In this one, a brief description of BA Glass, company where the internship of this thesis was conducted, was made, followed by the motivation and aim of the project, its main goals and contributions, the methods used in order to achieve the goals and, at last, the structure of this document.

The second chapter is regarding the literature review where theoretical knowledge is presented regarding electronic commerce and its importance in the businesses nowadays. Then a summary of the principle elements of a business plan are presented with a brief description regarding the main points that each one should contain. At last, some decision criteria used to assess investment projects are presented.

The third chapter intends to describe the current state of the project, identifying the main pain points and opportunities for improvements.

The opportunities for improvements are then assessed in chapter four, where the state To-Be of the project is described, alongside with an investment analyse.

The final chapter sums up the main conclusions obtained throughout the whole work, as well as the future works that can be done in order to give continuity to the project.

Chapter 2

Literature Review

In a project aimed at re-thinking and re-designing an existing business, the first stage was to determine the most effective solutions to enhance the business, making it more in-line with the current demands of the market. Following the understanding of the disruptive potential of digital solutions, an extensive study in this area, in concrete in electronic commerce, was performed. This involved defining e-commerce, distinguishing between e-commerce business models and getting insights regarding the benefits that come with adopting this business strategy and how to adapt business models to it.

Following this, a research about business plans was conducted in order to understand what are the most relevant areas to have in consideration, while creating the new business model. This research started with understanding the purpose of making a business plan and finished with a detailed description of the most relevant elements.

Finally, a study of investment projects was carried out with the aim of developing theoretical knowledge to make a connection between theory and the practical application of figuring out the financial feasibility of a project.

2.1 E-Commerce

E-commerce was created in the 1960s when companies started using Electronic Data Interchange (EDI) as a way to communicate data with other companies. Document sharing over computer networks eventually became standard for organizations in the 1970s. The popularity of electronic networks grew steadily until the advent of online marketplaces in the 1990s emerged (Taher, 2021).

Nowadays, e-commerce refers to a range of activities that are both directly and indirectly connected to the exchange of goods, services and information over computer networks. Being primarily driven by the Internet, electronic commerce can be found everywhere in the World Wide Web (WWW). Electronic Data Interchange, which was previously the main focus, has given way to the Internet, although the technology needed to communicate information is still the main concern, rather than the inter- and intra-organizational business operations they support (Gunasekaran et al., 2002).

Electronic commerce became an important way to do business and has led to an increase in online firms and virtual business partnerships (Mourtzis et al., 2021). Yet, because online businesses come in so many distinct forms, there are now classifications that characterize e-commerce from different perspectives such as business-to-business and business-to-consumer (Mashalah et al., 2022).

2.1.1 Business-to-Business

The business-to-business e-commerce refers to the application of internet technologies that assist in the process of purchasing, selling and exchanging goods and information between two or more different firms. This exchange can also be made through a third-party intermediary, whose goal is to help in connecting buyers with suppliers. The supplier makes a request to the business, with the goal of later selling those goods to the final consumer (Taher, 2021). The B2B transactions include a wide variety of technologies ranging from EDI and e-procurement systems to marketplaces (Jewels and Timbrell, 2001).

The B2B model has grown significantly, in the field of eletronic commerce, in the last years, exceeding B2C in terms of volume sales. This is due to the fact that modern value chains behave as interraleted worldwide networks that interchange raw materials, semi-goods and final products (Moriset, 2018).

The main characteristics of a B2B e-commerce model are that it is based on a manufacturing culture, the number of clients is usually small, being their transactions of large units, setting different prices to different clients and a complex buying sequence. Due to this, they face the challenge of delivering large amounts of online orders in a quick, safe and cheap way (Mourtzis et al., 2021).

According to Astute Analytica's 2021 report, the global B2B e-commerce CAGR is expected to be 14.1% during the projected timeframe ranging from 2022 and 2027 [1]

2.1.2 Business-to-Consumer

The business-to-consumer e-commerce is related to the connection between companies and end consumers that allows the sale of goods and services, entailing firms to communicate their products via the Internet (Jewels and Timbrell, 2001).

The rise in prominence and adoption of this e-commerce model can be allocated to the increase use of the Internet worldwide and the ease and convenience it provides to its users. Furthermore, Covid-19 had also a crucial paper in the expansion of B2C e-commerce, due to the lock-downs and social distance measures, familiarizing consumers with the benefits of using electronic commerce.

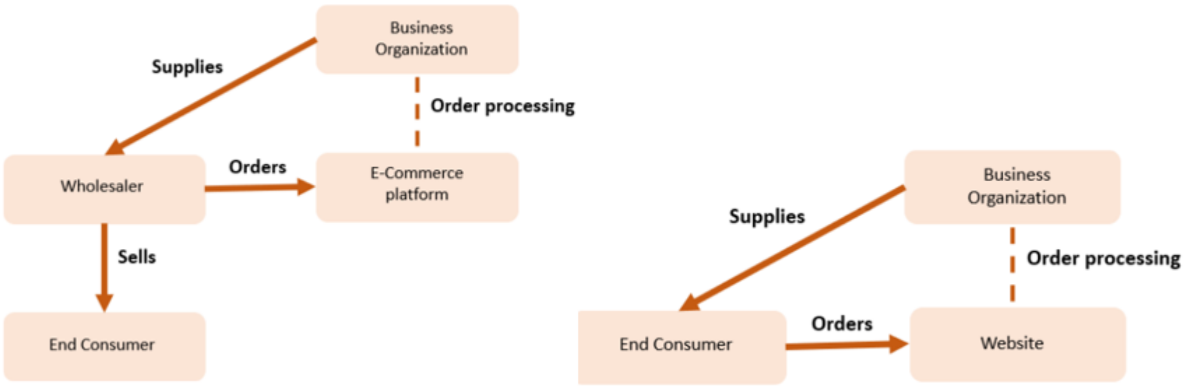
This model is characterized by a marketing culture, building value in the brand relationship, having a large customer segments, with usually smaller transactions. B2C experiences are usually more related with the customization of products in order to add more value to the final product (Mourtzis et al., 2021).

[1] See `https://www.astuteanalytica.com/industry-report/b2b-e-commerce-market`. Accessed on 17-03-2023 at 11 A.M.

In the B2C model the transactions usually take place in a website from a business organization. The end consumer places its order via the website, the firm receives the order request and then it will deliver the product to the customer (Yu et al., 2016).

The CAGR is expected to be 9.1% during the period between 2022 and 2026, according to the consulting company Globaldata statistics in 2023 [2]

Figure 2.1 represents the different models of e-commerce previously described.



(a) B2B model (b) B2C model

Figure 2.1: B2B vs B2C e-commerce model. Adapted from (Taher, 2021).

2.2 Platforms of E-Commerce

The rapid growth of technology throughout the years, in particular the World Wide Web (WWW), Internet and Information and Communications Technology (ICT), have culminated in the emergence of different online business solutions and e-commerce platforms. These technologies aid in data and workflow control, process management and communication, with the goals of boosting factors such as productivity, information and interaction flow. E-commerce technologies are now universally acknowledged as the key means of achieving these goals (Zou and Seo, 2006).

2.2.1 Electronic Data Interchange

EDI is the electronic communication of data and records such as invoices, purchase orders, and bills of lading among computer systems in various organizations using a common, structured, machine-retrievable format, providing the same information that has historically been found on

[2] See `https://www.globaldata.com/store/report/business-to-consumer-ecommerce-market-analysis/`. Acessed on 2023-03-17 at 11 A.M.

traditional transaction papers. Transmission is accomplished by the employment of an intermediary, which might be a value-added communication network or bank, minimizing paper work associated with commercial transactions and removing errors caused by manually entering data (Yazdanifard et al., 2012).

EDI was designed to facilitate commercial transactions between known trading partners rather than to identify new potential suppliers who sell products and services. As a result, it is not intended to accommodate new participants, and it is not well-suited for usage in electronic markets where purchasers expect to be able to search for products, prices and relevant information throughout a broader market. Furthermore, the use of EDI is restricted to transactions between two firms rather than the entire market, and these transactions are limited to relationships supported by legal contracts outlining the obligations of the trading partners involved (Albrecht et al., 2003).

2.2.2 E-procurement systems

It is critical to update logistics and purchasing methods by e-procurement, which is now recognized as an important procurement technique in today's business environment. This change from manual to electronic procurement procedures might allow firms to function more efficiently and compete in different marketplaces at the same time (Siddiqui et al., 2022).

E-procurement is an internet-based system that automates processes and operations within a business, such as negotiation, ordering, reception, and post-purchase review (Toktaş-Palut et al., 2014). E-procurement primary purpose is to simplify online purchasing of goods, consolidate and harness organizational spending power, uncover new sourcing options, minimize administrative costs, reduce the order fulfillment cycle time, reduce stock levels and decrease the price paid for goods (Davila et al., 2003).

On the other hand, these systems are proprietary and subscription-based, with no global standards or broad market reach (Albrecht et al., 2003).

2.2.3 E-Hubs and marketplaces

E-hubs consist of internet intermediaries that operate in specific industry verticals or business activities. They host marketplaces and make use of different processes in order to support commercial transactions (Zhao et al., 2010), such as identifying possible trading partners and allowing for the exchange of product offerings and prices (Standing et al., 2010).

E-hubs can be either public marketplaces or private exchange platforms that operate within businesses. In both instance, hubs have shown their potential to enable real-time global distribution, while removing barriers traditionally imposed by geography, allowing a fully engagement of buyers, B2B or B2C. Value is added by hubs, since they have the ability of aggregating in the same place different buyers and suppliers, lowering transactions costs and time, providing transparency to the market (Anumba and Ruikar, 2009).

Nonetheless, some limitations remain. Since hubs suffer from limited connectivity to other hubs this results in market fragmentation. Moreover, suppliers can be unwilling to expose themselves to the price comparison that hubs make possible. At last, the lack of common standards between different hubs make suppliers incur in higher costs, when connecting to different marketplaces (Albrecht et al., 2003).

Figure 2.2 represents schemes for the three different platforms, previously presented.

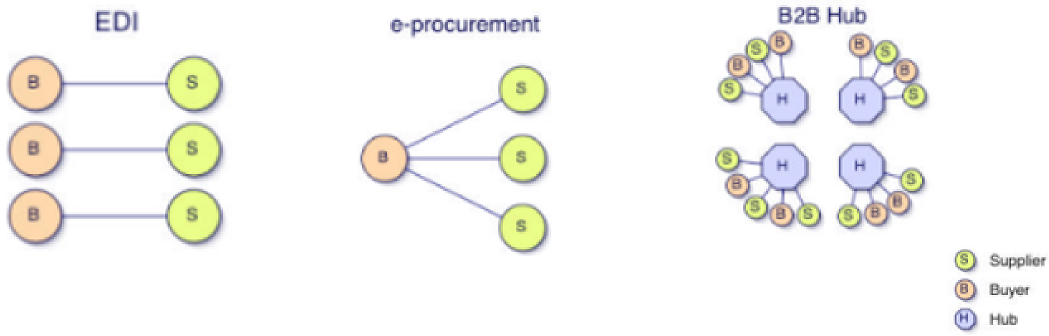


Figure 2.2: E-Commerce Platforms. (Albrecht et al., 2003).

2.3 Benefits of E-Commerce adoption

Creating value is at the very core of any competitive advantage. A business gain a competitive edge when they are able to generate value by its operations either in the industry or in the market, providing consumers with greater value by lowering prices or likewise by delivering unique benefits that justify a higher price when compared to competitors (Hu et al., 2019).

Companies that make use of e-commerce are able to overcome geographical barriers, expanding their markets countrywide and worldwide. They can potentially increase profits and gains, reducing costs, while boosting their productivity (Ocloo et al., 2020). Furthermore, e-commerce allows for the understanding of customer behavior, allowing businesses to successfully target the right audience (Taher, 2021). Consumers' comprehension of firm's products and offerings are also improved, enabling them to check their orders status and issues, without always having to get in contact with some representative, enhancing customer experience (Kumar and Petersen, 2006). Among the many other benefits are the integration of internal and external business processes, reduction of operational costs, reduction of transaction costs, enhancing relationships between suppliers, buyers and end consumers, and driving down inventory expenses (Kumar and Petersen, 2006). Organizations are more likely to embrace e-commerce transaction if they are able to perceive the benefits previously mentioned of engaging in this type of business (Hussein et al., 2019). Regarding benefits from the customers' point of view, e-commerce platforms are available 24 hours, during the whole year, allowing customers to shop at any time. By visiting the website, customers can make purchases, whenever it is convenient for them, through an user-friendly interface and categorized products' lists, allowing for a quick and easy ordering process (Taher, 2021). Moreover, online purchasing gives consumers' great flexibility, with particular significance to delivery service, being this an area that retailers are constantly improving with the aim of differentiating themselves (Tokar et al., 2021). These flexibility also aligns with the convenience of comparing products between different digital platforms, increasing the information available. This also enables competitors to improve product innovation. As a result, business conventions are being disrupted by e-commerce and opening up new channels of competition (Haryanti and Subriadi, 2020).

E-commerce is becoming a more commonplace and businesses must evaluate what are the costs related to implementing electronic exchange of information, goods and services, while assessing the consequences of not embracing this move (Turley, 2001).

2.4 Adapting business models to e-commerce

The past decade of innovation in the technological field has completely changed the way organizations work. Companies are now required to have a strong online presence in order to be constantly connected. It is critical for the business' success to adjust to the shifting global business context, while responding to the customers' expectations (Doloto and Chen-Burger, 2015) that are constantly shifting due to their increasingly desire of customized products and services, while embracing new and different purchasing approaches, choosing online sales over in-store sales. People are preferring the convenience offered by the online channels (Fenech et al., 2016).

With the rise of customers' expectations, enterprises are being put under pressure in order to adapt and change their business strategies, switching from the traditional business models into new ones (Mourtzis et al., 2021). Disruptive models aim to provide a unique proposition value to the market, while reshaping organizational structures and offerings. Having a new business model does not mean discovering new products or offers, but instead redefining the ones that already exist and the way they are delivered to the customers, adding more value to the customer experience (Schiavi and Behr, 2018). Various creative models have emerged in different industries such as telecommunications, banking, among others (Günzel and Holm, 2013), being vital to choose the right one, since this allows for an increased business flexibility and efficiency, while meeting consumers' requests, ensuring competition in the context of globalization. Due to this, it is important to create e-business models that specify which information should be transmitted, as well as when and how to provide it accurately (Chen and He, 2009). Below are listed some of the e-business models that have emerged in the past years (Doloto and Chen-Burger, 2015).

- **E-shop** - refers to a business that promotes the brand by selling goods online;
- **E-mall** - group of e-shops where different companies offer their items under a single structure.
- **E-wholesaler** - caters to the B2B market and members are required to have a membership in order to make purchases;
- **E-logistics** - third-party operators in charge of product movement.

E-commerce on the internet is expected to bring up new types of business organizations in the coming years, which will substantially contribute for the economic growth (Hawkins, 2002). With the goal of staying competitive in the market, businesses are changing their models and turning to digital marketplaces in order to stay in tune with what customers want. Consumers who were in the past unfamiliar with online shopping are now comfortable with the concept, leading to the introduction of new business models that are more focused on digital platforms instead of physical ones. The year 2020 was a particularly important milestone in the world economy, since covid-19 pandemic accelerated and boosted the daily adoption of electronic commerce, both by consumers and businesses, which is now gradually changing old business models (Costa and Castro, 2021), as previously mentioned. There is a strong argument that this change is being placed on a large scale, since e-commerce has the power to affect both manufacturing and distribution processes (Hawkins, 2002).

2.5 Business Plan

Business plans are important management tools for organizations. Emphasizing this, is the fact that almost 10 million copies are written annually around the world (Karlsson and Honig, 2009).

A business plan can be thought of as a manuscript that tries to promote and support a overall business idea to potential stakeholders, as well as investors. It should clearly and adequately explain and characterize your business idea and future growth of it, highlighting the project's strengths, weaknesses, opportunities and threats (Schwetje and Vaseghi, 2007). However, an authentic business plan implies more than just putting words on paper, it encompasses strategizing and developing an idea with the purpose of turning it into a profitable business venture (Cooper, 1989).

There are two different types of business plans, regarding the main goal. On one hand, the ones made by start-ups are more centered on what the young enterprise will do and how it will achieve it. On the other hand, regarding existing businesses, the purpose is to manage milestones, metrics, delegate tasks, manage performance and balance a budget, while projecting expected revenues and expenses (Masciocchi, 2019).

2.5.1 Purpose of writing a business plan

A business plan leads the venture by initiating a discussion about what are the goals and the expected outcomes of the new business. It organizes and clears out thoughts and ideas, making sure all important areas are covered, while stimulating at the same time forward thinking. Moreover, the business plan is a way to communicate with investors, employees and customers, allowing them to provide insights that can increase the success of the project (Ehmke and Akridge, 2005).

There is a specific order of operations to prepare a business plan. First, it is important to acquire the necessary data just like prices, competitors and market analysis. Then it is important to organize the business activities, select suitable strategies and finally develop a written plan (Guţă, 2014). Setting goals and developing strategies to meet them are critical components for corporate success. A business plan also has the purpose of serving as a baseline to evaluate achievements and highlight areas that need further improvement (Hormozi et al., 2002). Figure 2.3 represents a scheme of the planning process of a business plan.

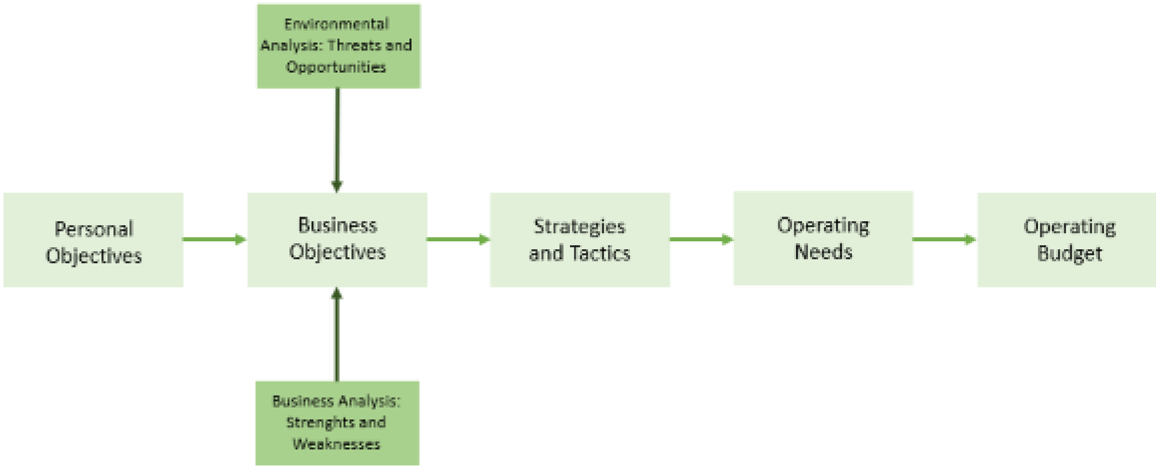


Figure 2.3: Planning process of a business plan. Adapted from (Burns, 1996).

2.5.2 Elements of a business plan

The nature and stage of development of the venture will impact the form of the business plan. Although there are no exact guidelines for what should be present in a business plan, it is necessary to stick to some basic principles that make sure that the most important and relevant information is covered within the document (Gutterman, 2023). According to this, business plans usually have some elements in common (Standing et al., 2010), that are described in detail below.

- **Executive Summary**

The executive summary, which is usually between two and three pages long, is the first main section of a business plan. Its primary purpose consists on successfully promoting the venture, as this is usually the component that attracts investors when they begin evaluating the project (Hormozi et al., 2002). As an outcome, it is crucial that this section captivates the reader and persuades him to dive into the rest of the document (Brown, 1996). It is often written as the final stage of the writing process, providing the best overview possible of the problem at hand as well as the solutions proposed to solving it (Masciocchi, 2019).

This section allows to highlight the most important sections such as the business' mission, its goals, the target, market and its potential reach, what is the marketing plan and the management team, and finally, operational elements and financial statements (Ehmke and Akridge, 2005). Subsequent sections will be important in order to go deeper in detail about theses factors (Hormozi et al., 2002).

This aforementioned section of the business plan is of high importance because it is what the investors first read, with the aim of understanding if the rest of the written document is worthwhile reading. If the executive summary does not capture their interest, then it is very likely that even a good business plan could be discarded (Schwetje and Vaseghi, 2007).

- **Business Description**

The goal of this section is to provide an overview of the firm and its key goals, justifying the existence of the new business. It is vital to include a mission statement that conveys the project's motives and intentions (Ehmke and Akridge, 2005), including a set of beliefs which point out the strengths that distinguish the new venture from already existing ones (Nunn et al., 2010). Furthermore, in the case of an on-going business it is important to include a description of the company's nature - manufacturer, retailer, wholesaler - and an explanation of the status quo and the geographical area that it currently covers (Rhonda Abrams, 1991).

To successfully acquire capital it is also significant to present a short but explicit explanation of the range of products and services that will be available (Hormozi et al., 2002). It is necessary to be detailed when describing the products and services, however, if it is a lengthy list, then it is most important to identify the major categories. Additionally, if there are future products and services to be implemented it is important to provide specific information and details about them, such as an estimate of a release date (Rhonda Abrams, 1991).

At last, in this section of the business plan there should be an outlining of the current facilities, the size and the operational function it serves. In case a new facility is to be required, it is critical to explain why and justify whether the new facility should be built or leased. There can also be a comparison of the actual state of the premise and the future of it (Nunn et al., 2010).

- **Marketing Plan**

The Marketing Plan encompasses the study of the market, beginning with the industry where the new venture will operate, the target consumers and their profiles, as well as an analysis and benchmark of the competitors already established in the market. Furthermore, the distribution and sales channels, as well as the pricing and marketing plans, involving advertising campaigns and customer relationship management, are also covered in this section of the business plan (Lopes, 2018). Doing a market analysis and having a marketing approach is essential for the business income generation (Haag, 2013).

Market Research

Conducting a market research is important in order to know if the market is sustainable or substantial (Cohen, 2002) and to describe better the industry, its size, growth and level of competition. With the aim of getting better insights, it is necessary to assess current trends, potential opportunities and hazards (Bangs, 1995). Furthermore, it is essential to analyse market segmentation. This enables to comprehend various services and products that suit the same customer needs (Masciocchi, 2019), helping establishing the initial and future target markets of the new venture, in addition to developing an efficient marketing plan, by determining what will be the products and services offers (Lawrence and Moyes, 2004).

Target customer profile

Moreover, it is important to understand who are the customers (Cohen, 2002) and what are people's purchasing preferences and motives, such as lifestyle options, needs or interests, with the goal of deciding what are the products and services that are more required (Bangs, 1995). The products and services of the venture may be attractive to a diverse group of potential customers, however, the aim is to accurately identify who is the target client and create its profile while gathering information (Ehmke and Akridge, 2005). Filtering the target market does not restrict the opportunities potential but rather identifies the ideal and most likely clients, helping in creating marketing campaigns essentially for the range of clients targeted (Masciocchi, 2019).

Competitors assessment

Once the market is established, there will be a better knowledge regarding the businesses that are already competing in the specific field the new venture will compete (Schwetje and Vaseghi, 2007), so this section of the business plan will provide a breakdown of the strengths and weaknesses of the players that are competing in the same field (Masciocchi, 2019). The initial step, after identifying the major competitors, is to profile them and how they meet clients' needs (Ehmke and Akridge, 2005). It is fundamental to provide an overview of advantages and disadvantages of the competing companies. This will include figuring out the causes of their success as well as their drawbacks. These drawbacks might open up opportunities for differentiation from the competition (Masciocchi, 2019). This analyse can be carried out with the use of a competitive matrix that contrasts the new venture with other businesses. A various of features should be included such as the range of products and services offered, pricing strategies, distribution channels and, in case of online presence, website features (Lawrence and Moyes, 2004).

Pricing strategies

Additionally, pricing falls under the market analysis section. It requires determining the cost of production and which strategy will be used in order to decide prices (Hormozi et al., 2002). Pricing strategies are established having into account elements such as the perceived value of the products and services, the costs involved in operating the business, the marketing goals and predicted competition behaviors (Ehmke and Akridge, 2005). One of the most essential features of the chosen strategy is its realistic position when compared to the competition. Far greater than demonstrating to investors exact numbers is to demonstrate an extensive pricing analysis (Hormozi et al., 2002). After defining a strategy, it is important to explain it and how it will efficiently attract customers. Furthermore, it is valuable to explain how the channel price will work, which means, how there will be discounts granted to each product. Highlighting any data that supports clients' willingness to pay the set prices is also of high relevance (Lawrence and Moyes, 2004). Lastly, it is important to justify whether the prices practiced are above or below the market (Ehmke and Akridge, 2005) and keep track of the current market price range and competitors prices tactics (Schwetje and Vaseghi, 2007).

Marketing strategies

The development, pricing and promotion of goods, concepts and services, after being strategically planned, are put into practice through marketing, with the aim of achieving the goals of both individuals and organizations (Hisrich, 1992), by providing thorough information on how the goods will be promoted to the target market, using advertising material that focuses on educating consumers in order to pull them in (Brown, 1996). The marketing strategy should take account of each important aspect of the venture that represents an opportunity, while keeping the focus on its consumer (Jillek, 2016). Additionally, it is important that information regarding the brand image and logo, promotional campaigns, both an initial and on-going budget for marketing and the distribution and sales methods for the items, are covered in this section (Masciocchi, 2019). Regarding the distribution and sales channels, it is vital to clarify which will be the channels used and what geographical area they will cover, being the selection of the channels affected by several variables such as costs, customer service, timeliness, among others. Creativity figures as the main character in the marketing plan, since creative promotions and activities usually outperform more costly strategies in terms of consumers' impact (Ehmke and Akridge, 2005)

- **Management Plan**

The Management Plan encompasses both the management and planning of operations, as well as the human and organizational structure (Lopes, 2018).

It is important to include an operational plan in the business plan, drawing on the concept, model and goals of the venture. This will allow for a comprehensive understanding of the business operations and the required resources (Schwetje and Vaseghi, 2007), with the aim of providing readers with insights of how the operations will be organized, set up and performed in an efficient way (Vestal, 1988). The operations main stages and their production capacity as well as the schedule should also be explained, including if it will be full-time operations or part-time. The technology that will be used should be assessed, justifying the decisions made and clarifying costs associated (Lopes, 2018). Moreover, inventory management, record keeping, billing procedures (Ehmke and Akridge, 2005), facilities management, quality reports, contracts management and the creation of standardized contracts' forms, should also be included (Gutterman, 2023).

Regarding the human and organizational structure, it is significant that the management team is properly identified. The level of skill and expertise of the team is as relevant as the goods and services provided, from the point of view of investors (Gutterman, 2023), that perceive that without having the right management team, then the other parts of the business can lose their significance (Hormozi et al., 2002). Outlining the hiring needs is also crucial. It is important to provide, for the pertinent positions, a description of the job, including the duties, payments and requirements. The strategies that will be used in order to find the ideal candidates should also be explained (Ehmke and Akridge, 2005). In order to sum up all of this, it is advised the creation of an organizational chart displaying the management flow containing significant personnel while listing their contributions to the business. It is advantageous to have a fallback strategy in place for any potential vacancies in key positions (Masciocchi, 2019).

- **Financial Statement**

After the business idea has been created and developed together with the various parts of the business plan, the financial components are then addressed (Schwetje and Vaseghi, 2007). With the goal of evaluating a new investment and determining whether it will be profitable or not, a financial strategy must be defined, serving also as an orientation on how to manage the venture's cash in the most efficient way (Ehmke and Akridge, 2005).

It is fundamental for the management team to address the investment necessary, preparing a long-term budget, in case a substantial investment is necessary. To do so, it is important to decide on viable options for the venture's activities, evaluating what resources are required for each one and prioritizing the ones that have the highest potential regarding the return on investment (Gutterman, 2023).

The financial section then sets off with a short overview of the venture's projections, highlighting key data such as sales, expenses, net income and the total increase in assets and net worth, being the most relevant financial statements the income statement, the balance sheet and statement of cash-flows (Hormozi et al., 2002).

- **Income Statement** - It enables to state if a business was profitable in a certain period of time. It begins by displaying revenues and then calculating the net income by subtracting to the revenues expenditures and expenses (Hormozi et al., 2002).

- **Balance Sheet** - It lists an entity's assets, liabilities and owner's equities at a particular point in time (Hormozi et al., 2002).

- **Cash-Flows Statement** - Represents the most crucial part since it shows how well entrepreneurs manage cash-flow, determining whether the business will prosper or fail (Hormozi et al., 2002). It is the variance, over time, calculated by using the ending balance of a period as the starting point and then cash flow is added or subtracted (Masciocchi, 2019).

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The projections for these statements are usually made for five years given that shorter plans do not provide investors with enough information regarding the business potential and anything beyond five years is too speculative, not adding any value (Schwetje and Vaseghi, 2007).

In order to create these statements, it is critical to make some important assumptions that will support the projections that should then undergo a comprehensive sensitivity analysis (Gutterman, 2023). A poor forecasting might have severe financial repercussions. If sales data are exaggerated with the aim of getting the proposal approved, these will likely result in the business failure (Vestal, 1988). Apart from sales volumes, important assumptions are also the payment due dates, receivables terms, inventory storage, as well as taxes and interests that must be paid (Lopes, 2018).

2.6 Analyse of investment projects

Finding new investment opportunities and evaluating them for potential inclusion in the company's investments strategy are part of the research of investment projects. This research is also known as "capital budgeting" where capital refers to the non-current assets that are used in production and "budgeting" denotes the preparation of projected financial inflows and outflows for a certain period. Investing in available financial resources into long-term assets aims to produce profit and create value to the business. Value is created when cash outflows are less than the inflows. These projects represent long-term strategic decisions for the companies, so it is crucial that they are properly analysed and that the decisions made are rigorously supported (Lopes, 2018).

Either in the financial theory and in the daily operations of the majority of the businesses, the decision criteria utilized for the evaluation and selection of projects should use, as foundation, the discounted cash flows. Some of these criteria are Payback Period, the Net Present Value, Internal Rate of Return and Profitability Index (Lopes, 2018).

Before describing the decision criteria, it is important to clarify the term cash-flow. It encompasses the elements that cause a variance in the cash balance, including the mix of cash inflows and outflows (Lopes, 2018).

The **Payback Period** determines how long it will take for the cash flows created by the project to surpass the cash flow initially invested in the project. Usually the payback period for the business is established being the project rejected in case the period calculated offsets the one established. Equation 2.1 describes how this criteria is calculated (Lopes, 2018).

$$\mathrm{PR} = \mathrm{NR} + \left(\frac{\mathrm{CR}}{\mathrm{CF}}\right) \tag{2.1}$$

Where,

NR - number of years until the cost of the investment is fully recovered;

CR - portion of the investment cost to be recovered;

CF - cash flow in the year where the fully recovery occurs.

The **Net Present Value** entails contrasting the project's total cash flows with the initial cash flow used. If the total of the cash flows generated exceeds the investment cost, or if the NPV is positive, then the project should be accepted. If not, the project should be rejected. The NPV can be thought of as the value of the extra capital that the project owner received in the present moment after paying back and covering up the investment cost at the cost of capital. If the NPV is zero, then the project will not generate value for the company and will not be able to return the cash spent (Lopes, 2018). NPV is calculate by the equation 2.2 (Lopes, 2018).

$$NPV = \sum_{t=0}^{n} \left(\frac{CF_t}{(1+r_c)^t}\right) \tag{2.2}$$

Where,

CF - net cash flow;
rc - weighted average cost per capital;
n - number of periods considered for the investment;
t - period t.

The **Internal Rate of Return** measures the intrinsic profitability of capital invested. It entails determining the discount rate that equals that present value of the project's net cash flows to the present of the investment costs, therefore, the discount rate that makes the NPV zero. Equation 2.3 demonstrates how to calculate the IRR (Lopes, 2018).

$$\sum_{t=0}^{n} \frac{CF_t}{(1+TIR)^t} = 0 \tag{2.3}$$

Where,
CF - net cash flow;
TIR - internal rate of return;
n - number of periods considered for the investment;
t - period t.

The **Profitability Index** compares the present value of cash-flows with the present value of the costs of investment with the aim of determining the project's present value, per euro invested. It is an equivalent of the NPV, but instead of calculating a difference, calculates a ratio. If PI > 1 the project is viable and can be accepted. Otherwise, if PI < 1 then the project should not be accepted. Having a PI = 1 means that there is an NPV = 0. Equation 2.4 shows how the criteria is calculated (Lopes, 2018).

$$\text{PI} = \frac{\text{Actual value of CF}}{\text{Actual value of CI}} \tag{2.4}$$

To sum up, these are some of the decision criteria used in order to determine the viability of an investment project. And even though it is necessary to assign different importance to different criteria, it would be unwise to not evaluate all of them.

Chapter 3

As Is situation

In this chapter, an introduction of BA Store will be made in order to better comprehend its role in BA Glass, its status quo and its potential to add value to the company. The purchase process alongside with the store's operations will be described to better understand the current way of functioning, with the aim of identifying the main pain points of the current business model. In the end of the chapter, the problems detected are going to be critically analysed, given that these bottlenecks will be the starting points to improve the store's operations. The enhancements are intended to make BA Store more suitable to the current market, while providing customers' a more complete and pleasant purchase experience.

3.1 BA Store

BA Store has existed in Avintes for the past 40 years going by the name of "Vendas a Dinheiro", being the new name already part of the change this project aims to achieve. The purpose of the store is to sell orders of small quantities, since BA Glass's commercial department only deals with orders of large quantities. Having this in mind, the minimum purchase that can be done in the store is of one unit and the maximum purchase is equivalent to the number of pallets that completes a TIR truck.

With the goal of understanding the weight in sales of the different types of purchases - units and pallets - a study was performed. This analysis was conducted through the extraction of data from SAP (ERP utilized by BA Glass) and then processing the data through excel. The rest of the analysis presented in this chapter followed the same methodology. Figure 3.1 illustrates the weight that the two different types of sales have on the annual sales value. It is possible to observe that in the last three years, the contribution of unit sales to the business volume has been significantly decreasing.

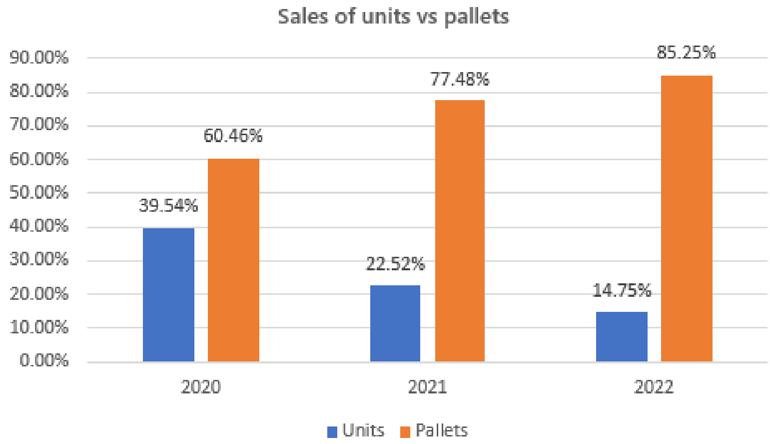

Figure 3.1: Sales of units vs pallets in 2020, 2021 and 2022.

Currently, BA Store engages mainly in business-to-business transactions, in Portugal and Spain, having a physical small store located next to Avintes' plant, without any identification. In the morning, the store is open to clients that have appointments, and, in the afternoon, it only manages orders by email or phone. The store is a sales channel of standard models of glass bottles and jars, that belong to different sub segments. Besides this, the store also sells accessories such as caps. Figure 3.2 depicts the sales breakdown by sub segment in 2022.

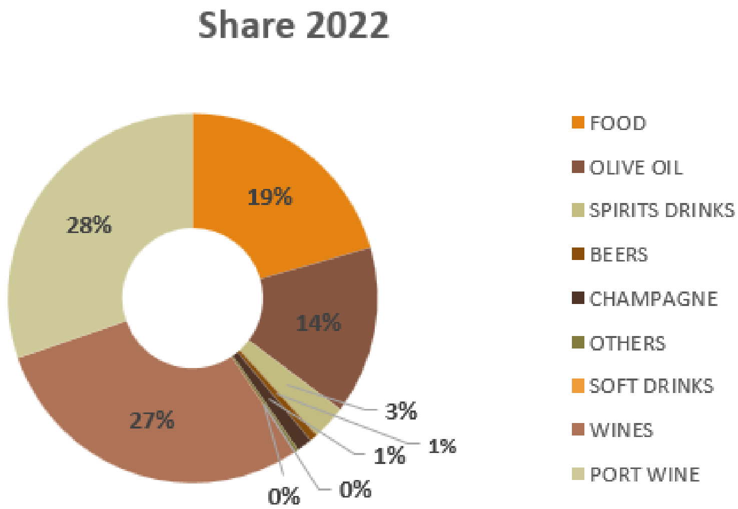

Figure 3.2: BA Store share in 2022.

By analysing Figure 3.2, it is feasible to understand that in 2022 the sub segments more sold were Port Wine, Wines, Food and Olive Oil. Moreover, the sell of accessories, represented by the sub segment "others", has a share of only 1% of 2022 total sales.

There is a cabinet in the store displaying the models that can be purchased. However, not all products that can be bought have samples displayed in the shelves and, moreover, some of the samples displayed are from models that are out-of-stock with no production in the near future. There is no identification in the shelves regarding this matter. This cabinet is the only way for customers to have access to the models sold, since there is no existence of any physical or digital updated catalog for the store.

In the back of the physical store there is a small warehouse with pallets. The rest of the stock is kept in the main warehouses of BA Glass, in the five different plants in Iberia: Avintes, Marinha Grande, Venda Nova, Léon and Vila Franca. The stock is not data-driven, so it is chosen simply based on what is expected to sell the most, drawing on experience.

Furthermore, customers can purchase models and personalize them using BA Glass's Decoration department. Customers can use this to build unique and personalized products that are tailored to their specific preferences and needs, adding even more value to the final product. Table 3.1 demonstrates the share of sales of decorated and non-decorated models from 2018 to 2022.

Table 3.1: Share of sales of decorated and non-decorated models.

Year	Decorated models	Non-decorated models
2018	0.56%	99.44%
2019	1.68%	98.32%
2020	2.19%	97.81%
2021	1.23%	98.77%
2022	0.66%	99.34%

It is feasible to understand that decorated models represent an insignificant share of sales in BA Store. This can be due to the fact that the store does not promote this service, since it does not have channels to do it, resulting in the store's customers not being individuals that seek this service.

The store has not evolved over the years, not accompanying the evolutions in the market, having the process and operations stayed unchanged. The store does not have any self-promotion or visibility, due to the fact that the current state does not convey any message or values to the customers. As for this, BA Store relies on their previous and old customers and peer-to-peer recommendations. Moreover, the sales suffered a breakdown with the Covid-19 pandemic, since the actual business model relies simply in a physical store, which lacks exposure as mentioned previously, not having any online platform that facilitates the purchase process from the customers' perspective. This highlights even more the need to improve and to make use of the digital solutions that are now available in the market in order, not only to prevent breakdowns like this from happening, but also to make use of digital platforms that are now being used in the retail sector and increase sales.

3.2 Overall purchase process

Before undertaking the establishment of any project, it is critical to understand all of the complexities and operations. As a result, the store's activities and the overall purchase process were tracked on an on-going basis for a week, in order to more thoroughly understand the store's functioning and identify the main bottlenecks and clients feedback and complaints.

Whether a client purchases less than a pallet or more will affect the procedure. Nowadays, the store does not have a proper portfolio for clients to check which models are available or which models may be available in a future production. The only way to know what is available for purchase is by visiting the store, which needs to be done with a previous appointment, or by a contact via email or telephone. Besides checking physically the stock available, if clients have technical drawings of the desired products, they can also be advised and redirected for similar models, currently available, through email or phone. After deciding about what models to purchase two different situations can happen according to order quantities.

The first situation is regarding the purchase of quantities smaller than a pallet. If this is the case, the purchase is limited to models with stock in Avintes, the only plant that currently sells through BA Store quantities lesser than a pallet. The client needs to go to the store, according to its appointment, and decide on the quantity to acquire. After this, the order is manually packed in the warehouse and an "order" is created in SAP. After the "order" is created it is automatically blocked in SAP, which means the invoice can not be issued and no payment can be done. To unblock the order, it is necessary to inform the financial department, wait for them to unblock it and then proceed to the payment and invoice issuance. After this, the client is responsible for the transportation of its purchased goods, since this is not a service provided by the store in the current process. The stock is updated in SAP afterwards.

If the client wants to buy a pallet, or more, the process undergoes slight changes. Stock can be from the five different plants of BA that exist in Iberia: Avintes, Marinha Grande, Venda Nova, Léon and Vila Franca. The client needs to inform by email the model and respective number of pallets that wants to purchase. After this, once again, an "order" is created in SAP and it will remain there, reserving the pallets, for 7 days. If after 7 days, there is no payment, the "order" is manually deleted from SAP. Otherwise, if the financial department confirms that the payment has been done, the "order" is unblocked, allowing for invoice issuance, that is sent to the client. The stock is updated in SAP, which allows for the issuance of the shipping handle that is also sent to the client. Following this, the respective shipping warehouse is informed that client X will pick up order Y with the shipping handle Z. Without the information of the shipping handle the client will not be able to obtain his order. Independently of the warehouse where the shipping will be made, the client must be responsible for the transportation, because this service is not provided by the store either for quantities smaller than a pallet or for pallets.

Figure 3.3 describes the overall process in a simplified way.

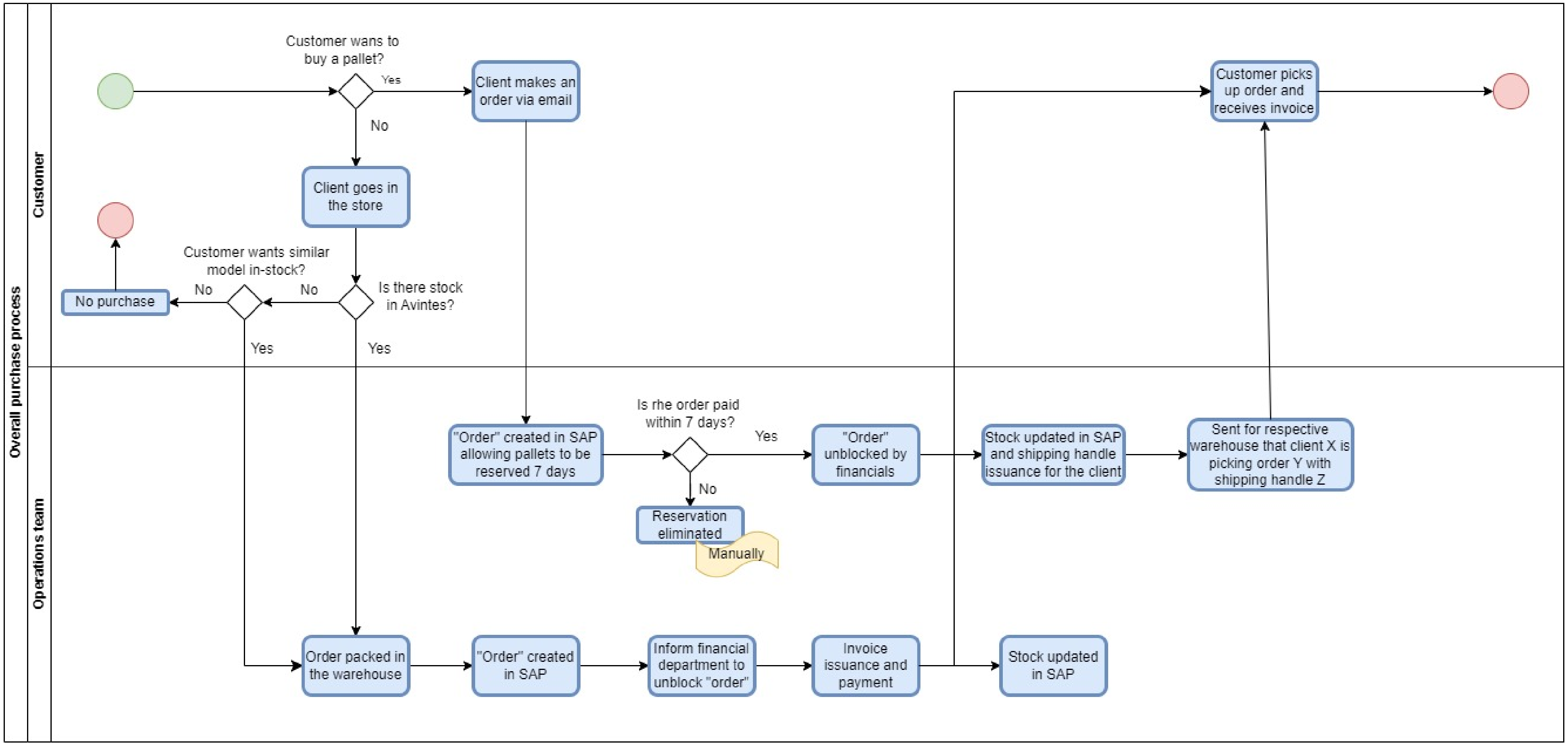

Figure 3.3: Overall purchase process As-Is.

3.3 Pain Points

By understanding better the current state of the store and mapping the overall process it was possible to detect bottlenecks and the main problems.

Firstly, definition of stock is not data-driven which can lead to inefficient decisions, making it difficult to optimize inventory levels. Since the store has limited resources, including a small warehouse in Avintes, it is even more crucial to make informed decisions about what models to order, quantities and when to order them. Not having a data-driven approach can lead to over-stock, under-stock or stock-outs. Over-stocking may lead to high inventory cost and lost in sales, since there will be space occupied in the warehouse with stocks that are not very sold when others could be more profitable. Under-stocking can lead to lost in sales and have a negative impact in customers loyalty, since they search for the products they need elsewhere. It becomes obvious that having stock that is data-driven is very important to avoid waste, remain competitive in the market, optimize sales, warehouse space and to understand clients' demand.

Furthermore, not having an updated portfolio, physically and digitally, showing available models or models that could have in-house production in a near future also has a negative impact. Firstly, it implies that the client needs to book an appointment to go to the store in order to have access to the models by looking at the cabinet with samples. This can be time-consuming and not very flexible, not assuring that the client will have access to all the models sold, since some do not have samples displayed. Moreover, by going to the store the client is presented with samples of models in and out-of-stock, with no identification regarding this matter. This creates expectation in the client and may pass the idea of low levels of stock if the client inquiries about models that are out-of-stock and with no production planned in the near future. Besides this, the lack of records for out-of-stock models requested by consumers, prevents popular products from being tracked, which would otherwise allow for a better knowledge of clients' demand. Likewise, there is no tool that automatically displays alternative models for when the customer requests a model out-of-stock. This has to be done by the store's employee due to the knowledge of the models in-stock and products' knowledge. However, this process is not foolproof.

Additionally, some SAP limitations were detected, such as blocked "orders" when the client buys quantities smaller than a pallet, creating a waiting time between the finance department unblocking the "orders" and the customers being able to pay. Additionally, not having "orders" automatically eliminated from SAP after 7 days without payment, prevents this stock from being available for other interested clients, if the timeline of elimination is not restrictively respected by the employees.

Moreover, the lack of transportation service does not make the process an end-to-end service, not providing clients the possibility to have a complete purchasing experience.

Lastly, customers perceive the store's prices as high, so it is relevant to analyze the prices set by the store, as this customer perception may be false due to the store not having the visibility that allows for a more direct comparison with, for example, distributors' prices. This highlights the importance of giving visibility to the business.

To sum up, the store does not provide customers a lot of flexibility, having outdated operations when compared to the solutions that are found nowadays in the market. Therefore, BA store presents itself as a great opportunity for innovations and improvements.

3.4 SWOT Analysis

SWOT analysis are performed throughout the strategic planning stage with the interest of identifying and assess current resources, internally as well as externally, and to investigate emerging patterns and trends that may have positive or negative implications in the business operations (Namugenyi et al., 2019). Strengths and weaknesses represent internal factors, as for opportunities and threats are about external factors related to things outside the company (Cheng et al., 2021). To provide further perspective for the opportunities and challenges that BA Store currently faces, a SWOT analysis was performed to discover potential sources of solutions and can be found in Table 3.2.

Table 3.2: SWOT Analysis.

SWOT Analysis	
Strengths	**Weaknesses**
BA Glass is a well-known and established company in Portugal;	Non-existence of an updated catalog with available models;
The store has production in-house;	BA Store does not have any visibility or self-promotion;
Portfolio with large diversification of standard models;	Stock is not data-driven;
Services in-house such as decoration, logistics, and finance.	Not an end-to-end service: delivery service not included.
Opportunities	**Threats**
Increase of online sales, especially since the Covid-19 pandemic;	Competitors offering a more holistic business approach;
Possibility of tracking and collecting data regarding clients' needs through digital platforms;	Price sensitivity if going online.
Different digital solutions available in the market.	

Chapter 4

To Be situation

This chapter aims to outline solutions to address the problem described in Chapter 3 - the need of redesigning the current business model. The initial focus was placed on improving the current functioning of the store, in order to provide a better working environment, while the development of the new business model was in progress. Afterwards, the core components of the business model were defined, accompanied by the gather of relevant data and performance of analysis. At last, after having the business plan developed and the main goals established, an investment analysis was made to better understand the feasibility of the developed and proposed project for the new concept of BA Store.

4.1 Immediate improvements

After mapping out the entire store operations, the first step was to organize the workplace, in particular the small warehouse in Avintes, with the goal of creating a better working environment, while the new business model was being developed. To do so, a stock assessment was initially done, with the aim of understanding the sales of pallets in-stock, in the warehouse, in the last years, through SAP, in order to remove pallets that had very low and not relevant sales in the last 3 years. This was important due to the fact that stock in BA Store is not data-driven, as mentioned previously, which can lead to over-stocking, high inventory costs and poor warehouse utilization.

After figuring out what pallets were not relevant to be kept, they were sent to BA's recycling plant to be used as cullet, broken glass, that consists of an important raw material in the glass manufacturing. This way, there was an enhancement in inventory cost and space utilization, without having glass waste. To better comprehend the impact of this task, the reduction in inventory cost was calculated, as well as the gain in the warehouse space. Equation 4.1 represents the inventory cost, Equation 4.2 calculates the reduction of inventory cost as a percentage, Equation 4.3 calculates the area gain by eliminating certain pallets, and Equation 4.4 determines the percentage of area gained.

$$\text{Inventory Cost} = \sum_{i=1}^{x} [(y(i,j) \cdot q(i,j))] \tag{4.1}$$

$$\text{Reduction }\% = \frac{(\text{Initial Inventory Cost} - \text{Eliminated Inventory Cost})}{\text{Initial Inventory Cost}} \times 100 \tag{4.2}$$

$$\text{Area Gain} = \sum_{k=1}^{y} A_{\text{elim},k} \tag{4.3}$$

$$\text{Area Gain }\% = \frac{\text{Area Gain}}{\text{Total Area}} \times 100 \tag{4.4}$$

Where,

- i - iteration variable representing the pallet number;
- j - iteration variable representing the article number within pallet i;
- x - total number of pallets;
- n(i) - number of articles in pallet i;
- y(i,j) - cost of article j in pallet i;
- q(i,j) - quantity of article j in pallet i;
- y - number of eliminated pallets;
- Aelim,k - area of pallet eliminated.

The reduction of inventory cost was 16% and the area gain was 14,5%.

Afterwards, and still regarding the warehouse, a new layout for the remaining pallets was established, since initially there was no reasoning for the layout.

Initially, an ABC analysis was conducted in order to categorize items regarding their contribution for the sales volume in the previous year. The analysis was conducted considering the sales data from 2022 and focused solely on the pallets currently available in the warehouse. It is important to note that this analysis does not reflect the total sales volume of 2022 but rather the relative impact of the pallets in-stock on the annual sales. Other models may have contributed to the sales last year but are currently not available in this warehouse. Therefore, the ABC analysis is exclusively based on the pallets in-stock, evaluating their contribution in relation to the total sales volume of the previous year. Category A represented the items that contributed to 80% of the sales, category B represented items that contributed to the next level of sales volume, 15%, and finally, category C included the remaining items. This analyse can be found in Figure A.1 in Appendix A. However, when analysing the pallets in the warehouse, concerns regarding stability of the goods emerged if certain pallets were placed together. In order to keep a safe stability, but still having a logic layout, it was determined that the most efficient approach would be to cluster the pallets based on the capacity of the bottles and jars. Furthermore, it was vital to ensure that all pallets were displayed with their identifying labels placed on the outside, making them easily visible, allowing for a quick identification of the pallets. This way, a more cleaned and organized work space was created, leading to an increase in productivity by reducing time consumption in locating specific pallets within the warehouse.

Additionally, while analyzing the overall purchasing process of the store, some operational issues were identified. To address these concerns, a meeting was held with the financial team to understand the necessity of blocked "orders" when customers visit the store and purchase units. As a result, it was decided to remove this default setting in SAP, making the purchase process more seamless and eliminating waiting for customers who had to wait for orders to be unblocked for payment. Furthermore, in collaboration with the IT department, an automation process was introduced through SAP to automatically remove pallets' reservations that exceeded 7 days without payment. This way, pallets would be available as in-stock, for other interested customers.

4.2 New business model

As mentioned previously, BA Store has outdated operations that do not align with the current market. Therefore, a new business model was developed, embracing modernity, enhancing efficiency and promoting a closer contact with consumers, by re-communicating this sales channel of glass packaging.

A business plan was created, for the existing BA Store, that focuses in increasing sales, while raising consumers' awareness and knowledge concerning glass packaging. The new business plan intends to boost revenues, but also to bring value to glass packaging, while promoting glass as a sustainable and valuable material. This way the business value is also enriched by effectively communicating a message to the consumers, having a value proposition, which does not exist in the current model.

4.2.1 Store's target and products

The first step was to define BA Store's portfolio and target, since this would help to better define strategies and extra services.

BA Store's portfolio is defined by all standard models, which include the segments described previously in Chapter 3. This portfolio includes a wide diversification of standard models inside each segment, providing consumers with a wide range of choice for different purposes.

Moreover, considering the range of quantities available to purchase at the store, varying from one unit to a full TIR truck, then the aim of the store is to cater customers with small quantities needs. Since the main transactions of BA Store are B2B, then customers will mainly consist of local and artisanal food and beverage producers, events' organizers, restaurants, among others, forming the core for the store's predominant B2B transactions.

Additionally, considering Figure 3.1, that illustrates the declining contribution of unit sales, there is an opportunity for the new business model to invest in the B2C segment, improving customer engagement, in order to boost sales of units. However, it is crucial to maintain the core focus in B2B, as it remains the main aspect of the business and sales of higher volumes are more relevant than sales of low volumes. Nevertheless, and since BA Store has the flexibility of selling as many units as the customer would like to purchase, the new business model can explore strategies to further promote B2C, alongside with B2B operations. This way, other target of the store will be end-consumers who would like to purchase glass packaging to use as products' storage at their houses, for DIY projects such as candles and craft items, home decor and gift packaging.

Moreover, since BA Store has the potential to make use of the decoration department at BA Glass, then another target will be companies and consumers that seek personalized gifts or unique products to use them in corporate events or special occasions. However, since this service does not have any promotion through the store, not giving the clients' visibility of this possibility, efforts will have to be made, regarding marketing strategies, in order to promote this service and attract an audience that is interested in this service.

4.2.2 Selling points

To address the selling points, a totally disruptive approach was deemed necessary, considering the old store's traditional sales method of in-person or by email.

It was decided to build a new physical store in BA Glass headquarters' surroundings, since the current one has old facilities. The purpose of the physical store is not to function as a selling point, but rather as a show-room and a picking point. It is necessary to have a space where samples of products are displayed, examples of decoration that can be made in the products are shown and inspirational ideas, especially for the B2C target, are presented. Additionally, product interactivity brings emotional connection to the customers, as it gives them the option to see and feel products. The store will be located in the surroundings of BA Glass headquarters, to provide a closer proximity between customers and the brand. Moreover, this will encourage people who have to visit the offices or the factory by any reason, to then visit the store.

As for sales, a shift will be made into a fully online business, where all transactions will be centralized and performed through a digital platform in the form of an open-to-public website. Transitioning to a website helps in improving the majority of bottlenecks found in the current business operations, as it will be shown forehead. The website will be a convenient and accessible platform for customers to explore products, place orders and engage with the brand without having to physically move themselves.

By embracing this approach, the store aims to provide a seamless and enhanced customer experience. The combination of an appealing physical store and an inspirational and user-friendly website will provide the store with an holistic business.

4.3 Market Analysis

After addressing the core of the new business model, the next stage involved conducting a market analysis that encompassed three different aspects. The first one was regarding the evolution of consumption of glass packaging in retail stores in the last years. Then a benchmark was carried out, with the goal of evaluating the competitors' businesses and understanding their strengths and weaknesses. Furthermore, a pricing analysis was performed, while studying competitors' websites, to determine the viability of reconsidering a different pricing strategy for the new business plan and model.

4.3.1 Glass market evolution

In order to conduct this analysis, data was collected from Globaldata, a data analytic company. The aim of these study was to understand the evolution, in the last years, of the consumption from end-consumers of glass packaging in various retail stores, where other packaging options are available, such as supermarkets, farmer's markets, artisanal and local stores, delicatessen and others. This study is important due to BA Store's primary B2B transactions, where businesses subsequently cater to end-consumers. For this reason, it is important to understand the evolution of demand for glass packaging from end-consumers, since their demand is directly connected to the demand businesses will have in the store. Additionally, understanding the evolution by segments enables to identify trends, so that BA Store can adapt accordingly and prioritizing the most relevant segments. Moreover, it is vital to know if the demand from end-consumers is lowering and the interest in glass packaging is going down, to better understand how viable will be to implement a B2C strategy in the store.

The research employed certain filters. The first filter was regarding the selection of years that ranged from 2017 to 2022, since it was crucial to include years preceding 2020, due to the potential impact of global pandemic covid-19 on consumption patterns during 2020 and 2021. Additionally, glass was the only pack material considered and countries included were Portugal and Spain, countries to whom BA Store sells. Finally, the industry chosen encompassed alcoholic beverages, soft drinks and food. Inside the alcoholic beverages, spirits, wines, beer and cider were considered. Food encompassed oils, seasoning, sauces and dairy food. Finally, soft drinks included drinks such as juice and water. This way, the study was able to include the sub segments depicted in BA Store's share in 2022, as seen in figure 3.2. The evolution of the consumption of glass packaging in Portugal and Spain is represented in Figure 4.1 and the units are in millions of pack units.

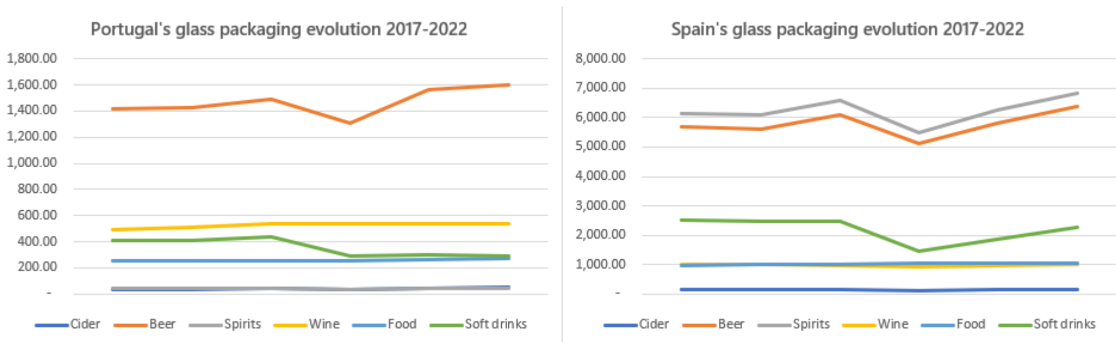

Figure 4.1: Portugal's and Spain's glass packaging evolution.

In Portugal, cider's glass packaging experienced the highest increase in consumption from 2017 to 2022, with a notable growth of 24.9%. On the other hand, the consumption of glass packaging in soft drinks suffered a significant decrease of 41.3% during the same period. Regarding the consumption of glass packaging for spirits, wine, food and beer, there were modest increases of 7.6%, 8.9%, 6.3% and 11.3%, respectively.

In Spain, there were declines in the consumption of glass packaging for cider, wine, and soft drinks of 3.2%, 1.0% and 12.0%, respectively, from 2017 to 2022. However, there were slight increases in the consumption of glass packaging of beers, spirits and food, that were of 11.2%, 10.3% and 9.3%, respectively.

Overall, it is feasible to understand that there are differences in the consumption of glass packaging across the different segments, being soft drinks clearly the segment with the most relevant decrease over the years, which goes in line with BA Store's sales of last year, where soft drinks had a share of 1%. However, from a general perspective the consumption of glass packaging is increasing steadily over the years in most of the segments, representing an acceptance from end-consumers towards glass packaging. Furthermore, the evolution of the different segments varies across countries, which means that strategies used to target Portugal and Spain can vary, highlighting specific segments in one country and others in the other one.

4.3.2 Benchmarking

Benchmark is the process of comparing the business' operations and practices with competitors, with the purpose of identifying the best practices, areas with potential for improvements and current market gaps. Benchmark allows businesses to find opportunities to enhance competitive advantage. Having this in mind, benchmark was also performed for the BA Store, as part of the new business plan, with the aim of understanding competitors' positioning in the market and better comprehend what strategy BA Store should approach to enter the online market.

4.3.2.1 Dealers' businesses and websites

After establishing a new sales approach, concentrating the sales in a publicly accessible website, it became clear that an assessment of the ventures already operating in the online business of glass packaging of jars and bottles should be made. This allowed for a thorough analysis of their websites with the aim of better understanding how their businesses work, understanding their strengths and weaknesses, as well as the main differences among them. This benchmark provided valuable insights regarding how the competitors are positioning themselves in the online market. Furthermore, it allowed to identify gaps in the market that provide opportunities for BA Store to distinguish itself from others. This analysis was fundamental in order to enhance the competitive advantage and increase the chances of succeeding, when entering the online business. The main insights are summed up in Figure 4.2.

		Goods sold	Quantity sold	Delivery service	Prices	Extras
Online	Competitor **A**	Glass packaging and alternative packaging materials and formats	Packs or pallets	Included	Fixed unit price	N/A
	Competitor **B**	Glass packaging and alternative packaging materials and formats	Packs	Included	Unit price varies with quantity	Possibility to customize labels for bottles
	Competitor **C**	Glass packaging and alternative packaging materials and formats	Packs	Included	Unit price varies with quantity	N/A
	Competitor **D**	Glass packaging for food and beverages	Packs or pallets	Included	Fixed unit price	N/A
	Competitor **E**	Glass packaging for food, beverages and cosmetics	Pallets	Not included	Unit price varies with quantity	N/A
Not online	**BA Store** current business	Glass packaging for food and beverages	From 1 unit to 1 full TIR truck	Not included	Fixed unit price	Decoration service for both jars and bottles

Figure 4.2: Competitors' comparison matrix.

In terms of goods sold and products offered, the majority of the competitors does not sell exclusively glass packaging for food and beverages. This hinders their ability to transmit a clear message to the customers, becoming harder to emphasize the unique benefits and advantages of each material. Moreover, a website that focus solely on one packaging material can be seen as a go-to destination for that specific material, improving trust and loyalty among consumers. Since BA Store will sell exclusively glass packaging for the food and beverages sector, it can make use of this and effectively communicate the benefits of glass in this industry and other relevant contents.

Regarding quantities sold, the options offered by the competitors vary between packs, pallets or both. BA Store is able to distinguish itself in this field by providing customers with great flexibility. BA Store offers a wide range of quantity options, allowing customers to purchase as many units as they want or pallets, until the quantity of a full TIR truck is reached. This is particularly appealing to customers that have specific quantity requirements. This identified gap in the market enables BA Store to stand out.

Concerning the delivery service, it became clear that the majority of competitors provide transportation, taking this responsibility from the customer, providing an end-to-end service. Since BA Store does not possess this service, this can be seen as a shortfall in the business and a reason for customers to not make a purchase. Moreover, by going online, and in order to promote B2C transactions, it becomes vital to have this service.

In relation to prices, competitors vary the strategies among themselves between having a fixed unit price and varying this price according to large quantities, decreasing the unit price with the increase of the quantity purchased. This boosts purchases of higher volumes, being an important feature for B2B transactions.

At last, considering that BA Store has the opportunity to make use of BA's decoration department to provide customers with unique and personalized products, adding more value to the final products, due importance was given to the competitors businesses with the goal of understanding if this service is already provided by others. However, only competitor B has the possibility of customizing labels for bottles. This represents another strength of BA Store and another way of differentiating from the already settled businesses, by promoting this service.

4.3.2.2 Pricing strategy

As part of the benchmark realised, a price analysis was conducted. Table 4.1 represents average of price difference between competitors, A, B, C and D, and BA Store. Competitor E, that entered the website analysis, was excluded due to the fact that it sells premium products. The price analysis was carried out by comparing prices between models of BA Store and models of competitors that had the same format, exact capacity and a variance in the weight of 5 grams maximum, since these were the factors considered more relevant to affect the final price.

It is important to mention that the main competitors are distributors, since direct competition, manufacturers, have not established an online business for small quantities, yet. Therefore, as expected, prices of competitors are higher than those practiced by BA Store. However, it was fundamental to understand how much higher the prices would be.

Table 4.1: Average of prices' differences between BA Store and competitors.

Competitors	**Average of prices' differences**
Competitor A	59.04%
Competitor B	76.44%
Competitor C	60.00%
Competitor D	57.98%

Since distributors sell products, at least, 50% higher than BA Store, then the store currently has room to consider a new pricing strategy.

At first, there was a discussion about the option of reducing prices. This discussion was motivated by the fact that, while mapping the current functioning of the store, it was detected, from consumers, a high perception of prices. Before proceeding with this reduction of prices evaluation, it was fundamental to analyze the sales performance from previous years comparing to 2023. As a result, Figure 4.3 represents the sales variation throughout the years, for each month from January until April, comparing to 2023. The analysis was made only until April, since there was no more data regarding the year 2023 at the time. The black line, with a constant variation of 0%, represents 2023.

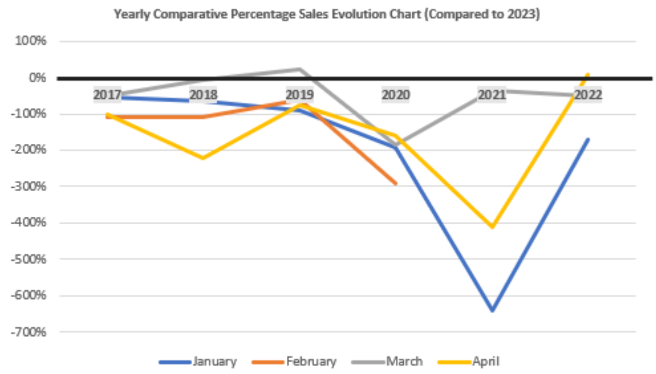

Figure 4.3: Yearly comparative to 2023 percentages sales evolution.

After a thorough examination of Figure 4.3, it was possible to understand that the sales in 2023 are higher, apart from March 2019 and April 2022, where the percentage variation is positive. In all the other months and years the variations are negative, which means that, in the same months in 2023 the sales were higher. It is important to highlight that sales in 2020 and 2021 were affected by Covid-19, justifying the lack of information in February 2021, when the store was closed, and the higher variations. By understanding that sales in 2023 are not lower than in other years, it was concluded that a reduction of prices, at the moment, was not justified.

Subsequently, the question of whether it would be appropriate to have different prices in the online platform and in the physical store was discussed. However, considering that the goal of the new business model is essentially to streamline the sales process and maximize online sales, not motivating people to make purchases physically, it was determined that differentiating prices across sales channels would be incongruous. If a customer visits the show-room and wants to make a purchase there, even in this situation, the website should be used, in order to centralize sales and incentive the use of the platform. If purchases done in the physical store had different costs, then centralizing sales would be difficult. If prices were lower in the store, customers with the possibility of going there would prefer it, being unfair to others, and if prices were higher, the transition to the website would be too forced among customers.

Furthermore, when conducting the benchmarking analysis of websites, attention was given to the pricing strategies adopted by different competitors. It was observed that in certain cases, discounts are offered based on the quantity of the purchase. This means that the unit price of an item decreases with the increase of the purchase volume. This pricing strategy promotes sales of higher volumes and, given that the previous store model maintained a fixed unit price, independently of the quantity purchased, it was concluded that a more appropriate strategy would be to correlate the unit price with the quantity of items bought. This way, an atmosphere of reward is created for the customers, as they perceive getting a better value for their investment. Implementing this strategy will require a slight adjustment to the base price. However, a thorough price analysis will need to be carried out by the pricing team to determine the specific percentage of price increase. However, it is crucial to consider that the increase in the base price should be moderate due to the fact that by entering the online business, BA Store will provide customers with increased transparency and convenience in comparing prices from various suppliers.

4.4 Mapping the website

Following the benchmark, mapping the new website and its functionalities was initiated, taking into consideration the user experience obtained by navigating in the competitors' websites. The digital platform will incorporate a range of features and tools designed to create a user-friendly and intuitive experience, ultimately adding value to the overall purchase process. Below, the key features, that intend to turn the website visitors into customers, are outlined and explained.

- **Easy navigation**

The website will have a clear and logical structure in order to make navigation effortless. The homepage will have access to the different segments with the aim of making the search easier and with less clicks. Inside each segment, the respective catalog will be displayed with the models in-stock and models out-of-stock, but with production planned within a time-frame of 3 months. This way customers can ask to be notified when stock is available. Since the website will be connected with SAP, whenever the production plans or stocks of models change, this will be automatically updated in the website, allowing for the update of models displayed. This way, if a model is out-of-stock for a long time, customers will not be able to perceive it, since the model will not appear in the catalog if there is no production planned in the near future. There will also be a search bar with the aim of providing access to a more immediate search using keywords. This is vital if the customer already knows the name of the bottle or jar it intends to buy, due to some names being widely used in the glass industry. This way, steps of choosing the segment and then searching for the product inside the catalog are deleted. Inside each segment's catalog there will be filters, such as capacity, color, height, diameter, weight, type of neck and if it is refillable or not, in order to shorten the search.

- **Clients' area**

In order to make a purchase, customers will have to make a login, which means they will have to have an account. By making customers having an account, the store can have a database of their clients, something that did not exist before, which made it difficult to communicate with consumers. Inside their account they will be able to check their own information and details such as billing address, invoice address, email, contact and other basic information. They will be able to edit them whenever necessary. Moreover, they will have access to their favourite products, deleting or adding products to this list. Inside the favourite products, they will be able to check products' details and add them automatically to the shopping cart. Furthermore, there will be access to the orders' history, displaying all orders already made, having the option to check each order details and re-ordering, to make the process more automatic for the consumers that make a specific order regularly, being this a very useful tool for the B2B transactions, since businesses usually order the same models, varying the quantity according to their demand. As for this reason, when re-ordering they will be able to edit the details before adding it to the shopping cart. Inside the orders' details the invoices will be saved with the possibility of downloading them. At last, there will be a tracking order section, for the customers to track their orders when they are in process.

- **Visualization of products**

Inside each product's page, their dimensional characteristics will be displayed. The stock will be shown for the customers to check if the quantity they desire is available without having to contact a commercial. However, purchases are limited to a maximum quantity, for each model, of pallets that fill a TIR truck. While the store will likely have higher stock than this available, it is not practical to display quantities that can not be bought. Therefore, the maximum stock displayed in the website will be, for each model, the number of pallets that completes the truck. The actual stock levels will only be shown in the website's back-office and in SAP, being displayed in the website only in case the real stock is lower than the maximum quantity to purchase. In cases where purchases are from different models, this strategy will not be enough to prevent customers from buying more than they actually can. For this cases, the website will send a message when the sum of stock ordered from different models reaches the maximum quantity. By acting like these, the maximum quantity gets limited and, furthermore, competitors do not get information regarding the stocks' capacity of the store.

Moreover, the locations of the warehouses, where stock is available to be picked-up, will be displayed. It is crucial to provide this information upfront, and not only in the checkout process, so that customers can make informed decisions about the most suitable delivery option, without having to go through the entire checkout process, saving time and giving flexibility for consumers to consider the delivery options before-hand.

Inside each product there will be suggestions of similar models in-stock, according to capacity and format. This is especially important to appear for the models out-of-stock, so that available alternatives are shown to the clients and they can be automatically directed to other options. The matching caps will also be displayed, since the jars and bottles do not have caps included.

- **Back-office**

The website will have a back-office, that can be entered with a special login from the operations team, where all orders will be displayed together with their status, allowing for a better management and follow-up of orders. Moreover, the back-office of the website will also have access to the clients' database and respective orders, making easier the process of checking a customer order and the clients' information. Stock of models and shipping boxes will also be displayed in the back-office, allowing for a real-time tracking, preventing stock-outs.

4.4.1 Order processing

Moving the sales into the website creates a new purchase process. To better comprehend the different connections between the front-office, back-office of the website and SAP, the order processing is described below.

Order placement

After filling the shopping cart and logging in, the customer is directed to the checkout area where they choose the payment method and the shipping option - to have the order delivered, to pick-up the order in the warehouse X or to pick-up in the physical store. Once this is done, the order is placed and enters the website's back-office as a "pending order". Then a confirmation of stock is made, since the real stock is available in the back-office and in SAP, being this verification a safety procedure before the payment. If by any reason there is not enough stock, an email is sent to the client informing that there is not enough stock and the client can either change the details of the order or cancel it. If there is stock available, the customer is requested to enter the payment details and upon payment confirmation the order changes its status in the back-office to "active" and it appears in the clients' tracking area as "preparing". The invoice becomes available in the clients' area in the website. The payment confirmation has a time-frame of 24 hours. After this, if no payment is confirmed, the order is cancelled.

Order preparation

After the order changes its status to "active" in the back-office and "preparation" in the website, a confirmation email is sent to the client. From this moment, the order becomes available in SAP and stock gets blocked. The operations team start preparing the orders for shipping. If orders are less than a pallet, then they need to be packed. If the orders consist of pallets, then they just need to be loaded into the transportation vehicle.

Shipping

Once the orders are ready, a shipping handle is issued by SAP and different things can happen according to the shipping method chosen by the customer. If the customer chose for the order to be shipped, then a tracking number is created by the carrier, the order is shipped together with the shipping handle and the order status in the back-office changes to "shipped", as in the website. An email is sent to the client with the tracking number, allowing them to follow the order from this number. If the client chose to pick-up the order, after the order is prepared, the shipping handle is sent to the clients' email. The shipping handle is also available in the website, in the customer area, in the orders' details. After making the shipping handle available to the customer, the customer can pick-up the order in the pre-defined place. The status of the order in the back-office of the website changes to "ready" and in the website to "waiting to be picked-up".

Figure 4.5 and Figure 4.4 illustrate the status presented in the back-office of the website and the corresponding status in the website, in the clients' area, and the flowchart of the order processing, respectively.

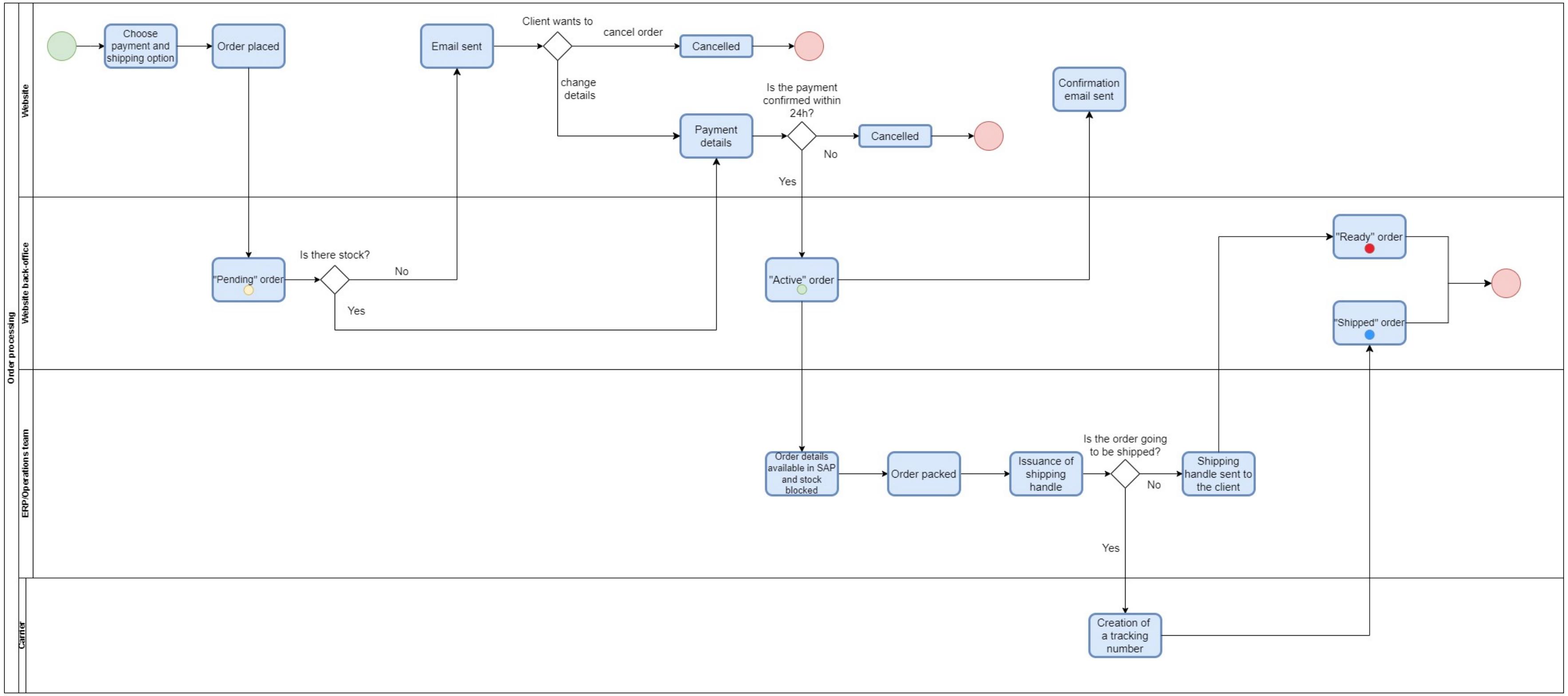

Figure 4.4: Order processing.

Website status	Back-office status
----------------	"Pending" ●
"Preparing" ●	"Active" ●
"Waiting to be picked-up" ●	"Ready" ●
"Shipped" ●	"Shipped" ●

Figure 4.5: Status website vs back-office.

4.4.2 Benefits of the website

By centralizing the sales in a website, the majority of the pain points identified in Chapter 3 can have a clear improvement. Figure 4.6 sums up the enhancements created by implementing the website as the new sales channel.

Paint Point	Improvement through the website
• Definition of stock isn't data-driven.	• Gathering data on customers' preferences, purchasing patterns and browsing behavior. • Gain of insight into trends and products in demand.
• Not having an updated portfolio.	• Displaying models in-stock and out-of-stock with production planned, real-time updated through SAP connection.
• Lack of records of out-of-stock models requested.	• Feature of "notify me" for products out-of-stock in order to keep track of the ones more requested.
• Not having a tool displaying alternative models.	• Displaying alternative models in-stock when the customer clicks on the page of an out-of-stock model.
• Operational SAP problems.	• Automated purchasing process.
• Lack of self-promotion and visibility.	• Website can reach a wide audience in a convenient way.

Figure 4.6: Enhancements created by the website.

4.5 Delivery service

Currently, BA Store does not offer a delivery service and it is solely the customer's responsibility to arrange external transportation. However, currently in the market, as it was seen before, the majority of online businesses provide delivery service, so in order to have a more complete purchasing service and enhance the customer experience, the new business plan aims to incorporate this service. To implement it, a meeting with BA's transportation department was done with the goal of gaining insights into what the initial steps taken should be. It was essential to determine the preliminary actions and the specific data required.

Since delivering units' orders is less complex than delivering pallets, the initial focus was to study the historical data of pallets' orders through SAP. The aim of this analysis was to understand which transports would be more suitable for BA Store. Three distinct analysis were performed.

The first analysis was regarding the number of orders that were of full pallets, and not units. It was studied how many orders of pallets were made monthly in the last 3 years - 2020, 2021 and 2022 - with the aim of better comprehend how often the store has orders of pallets. The results are displayed in Figure 4.7.

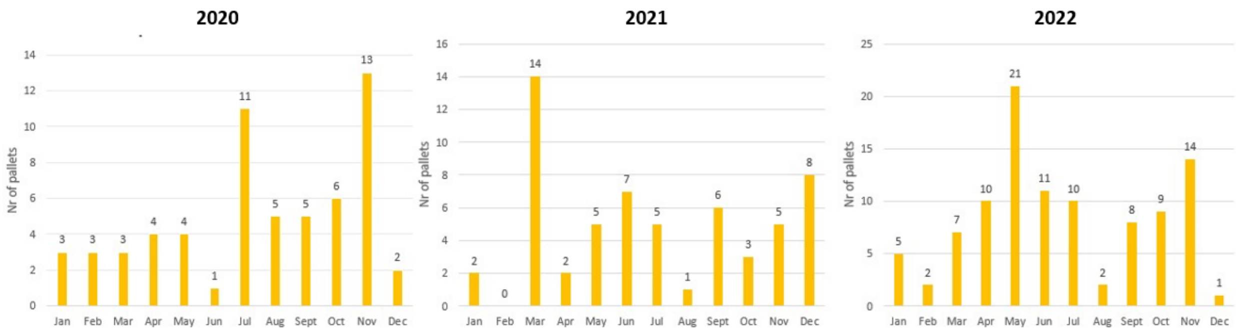

Figure 4.7: Number of pallets ordered in 2020, 2021 and 2022.

By analysing the results it is feasible to draw some important conclusions that have been summed up in Table 4.2.

Table 4.2: Main conclusions.

Conclusions	**2020**	**2021**	**2022**
Total of orders	60	58	100
Average of orders per month	5.00	4.80	8.33
Month with highest number of orders	November	March	May

There is a significant variation in the analyzed factors over time. This lack of consistency can suggest that there are demand fluctuations, being difficult to predict exactly how the number of pallets ordered will evolve over a year. There are factors that can influence this, like seasonality.

After having information about how many orders of pallets are usually done, then it was studied the number of pallets that were requested in each order. The results are shown in Figure 4.8.

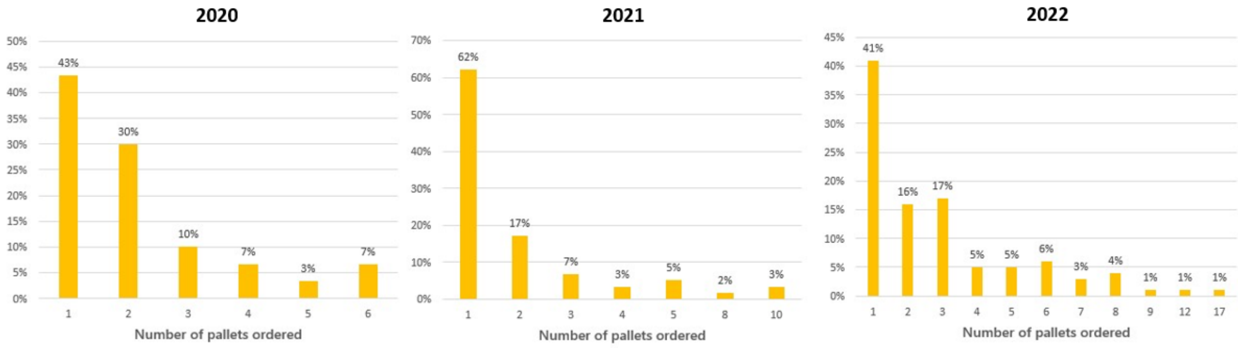

Figure 4.8: Number of pallets ordered.

It is possible to understand that regarding the number of pallets ordered there is more consistency, being this positive, since this is the main point to comprehend the dimensions of vehicles needed. In 2020, 2021 and 2022 the majority of orders were of 1, 2 or 3 pallets, being the maximum number of pallets ordered in the last 3 years of 17 pallets, in 2022. Furthermore, it is possible to observe that the maximum number of pallets ordered throughout the year has increased with the progression of the years. Based on this study, it can be inferred that the majority of pallets' transport requirements will mainly range between 1 to 3 pallets. Due to this, vehicles of small dimensions will be required or the strategy of shipping consolidation can be used by the carriers. This will depend on how fast customers will want orders to be delivered, since different categories will exist, such as express or standard deliver.

At last, an analysis was made concerning the dimensional attributes of the pallets, as this information is crucial in determining the space they will occupy during transportation. The most relevant information is summed up in Figure B.1 in Appendix B.

4.6 Marketing strategies

As the last step of the new business model development, it is important to shift the focus and define marketing strategies, especially digital ones. This holds particular significance for a store that has not yet established a brand recognition and that lacks visibility. Moreover, only a small number of customers will visit the show-room and be presented with inspirational ideas, so it is crucial to explore different strategies, with the aim of maximizing BA Store's outreach, build brand awareness and create customer engagement and loyalty.

Given the high engagement nowadays between people and social media platforms, these channels provide an easy and accessible way to reach individuals with content. Therefore, it was established the need of creating an Instagram and Facebook account for BA Store exclusively. The goal is to promote the decoration service and inspirational content through images and videos showcasing ideas. The accounts aim to establish an emotional connection with its audience, evoking emotions and boosting creativity, making individuals eager to recreate the showcased ideas. The visuals will be accompanied with captions that provide additional information, such as tips, in order to add even more value to the content. Moreover, to enhance customers' interactivity with the brand, the accounts will encourage people to share their creations using BA Store's glass packaging. A powerful visual storytelling will make BA Store be seen as a go-to destination for purchasing glass packaging and having inspiration.

Furthermore, a newsletter will be sent to BA's clients promoting the new business and store, with the goal of keeping BA's core customers updated and showing innovation from the company. Moreover, even though BA's core customers purchase large quantities, it is important to recognize that these businesses are comprised of individuals who can also be consumers that may be, in certain periods of time, interested in buying small quantities of glass packaging for events or for self-use, so it is also vital to promote the B2C channel that BA Store will have among core clients. Besides this, a newsletter will also be regularly sent to customers that create an account in the website and subscribe to it. This newsletter will have different content and promote different products, regarding Portuguese and Spanish customers', since the demand may be different, according to the country, as it was seen in the market analysis. A press release will also be created, explaining the new business, its goals and promoting glass as a sustainable and valuable packaging material, to be launched in partnership with media outlets, in order to reach a public outside BA's clients.

Additionally, to promote a modern image of BA Store brand, as well as to enhance the shopping experience, special shipping boxes will be used. These boxes will be used for orders smaller than a pallet. Three different QR codes will be created and they will be randomly distributed by the boxes, having each box only one. One of the QR codes will have access to promotional content about glass as sustainable material and explaining why it is 100% recyclable. Another QR code will have educative content explaining the benefits of using glass for preserving food and beverages, aiming to provide customers with enhanced knowledge. The last QR code will re-direct customers to promotional content from BA's decoration department, showcasing different types of decoration that can be done and explaining how BA Store's clients can make use of this service in purchases of small quantities.

These strategies aim to increase the store's visibility and attract old and new customers, creating a modern and unique customer experience. The goal is to reach a wide audience, both in Portugal and Spain, establishing presence in both countries.

4.7 Analysis of the investment project

After having the main aspects of the new business model defined it was vital, in the context of evaluating the project's investment, to make an income statement and a cash-flow map for the next five years, in order to better understand the financial performance and viability of the project. By forecasting the income and cash-flows, it was possible to assess the potential profitability and the financial sustainability of the investment.

The first step was to estimate the future costs of the store, through an in-depth research of expenses in the market, with the goal of calculating the operating costs. The costs considered were the construction of a new physical store, a new warehouse, the development of a website, warehouse equipment, office equipment and furniture, website maintenance, electricity and water, marketing campaigns and the payroll. Afterwards, the following assumptions were made, subsequently:

- **Constant Corporate Income Tax** rate of **25%** - rate applied for properties acquired without explicit indication of the land value; [1]
- **Payments** within **30 days**;
- **Receipts** within **1 day**;
- Weighted average cost per capital (**WACC**) - **8%**, value discussed with the financial department of BA Glass.

Regarding depreciations, the straight-line method was used and the following premises were made. [2]

- Depreciation of the **physical store and warehouse** - **5%** of amortization for tangible asset of industrial buildings;
- Depreciation of **office equipment** - **33,33%** of amortization for computers;
- Depreciation of **office furniture** - **12,5%** of amortization for furniture;
- Depreciation of **website implementation** - **33,33%** of amortization for intangible asset of development expenses.

For the purpose of creating the income statement and the cash-flow map, it was decided to make projections for three different scenarios. The first one was regarding a realistic scenario, the most likely to happen, and the other two encompassed extreme situations, being one optimistic and the other one pessimistic. To evaluate the percentage of increase or decrease in sales compared to historical data, a discussion was held with the commercials' team to decide the values to be used for the three different scenarios.

For the realistic scenario, an increase in sales of 10% was considered in the first year, followed by a further increase of 15% in the second year, and then a stabilization of sales, resulting in a total increase of 25% compared to 2022.

In the optimistic scenario, a 20% increase in sales was considered in the first year, followed by a 25% increase in the second year, and then a stabilization of sales, resulting in a total increase of 45% compared to the year 2022.

In the pessimistic scenario, a 30% decrease in sales compared to 2022 was considered, due to poor adoption of the online sales model.

After having these values established, then the income statement and cash-flow map were performed, which can be found in Figures C.1, C.2, C.3, C.4, C.5 and C.6 in Appendix C. Values have been multiplied by a k factor. [3]

[1] See `https://https://www.igf.gov.pt/inflegal/bd_igf/bd_legis_geral/Leg_geral_docs/DEC_REG_002_90.htm`. Accessed on 2023-05-15 at 3:30 P.M.

[2] See `https://https://www.igf.gov.pt/inflegal/bd_igf/bd_legis_geral/Leg_geral_docs/DEC_REG_002_90.htm`. Accessed on 2023-05-15 at 3:30 P.M.

[3] The values have been multiplied by a factor k for confidentiality reasons.

Afterwards, decision investment criteria were calculated, such as the Net Present Value, the Internal Return Rate, the Profitability Index and the Payback period, according to the literature review. Table 4.3 sums up the results obtained for the three scenarios.

Table 4.3: Investment Criteria Evaluation.

	Optimistic	**Realistic**	**Pessimistic**
NPV	1,226,064.14€	891,673.41€	88,841.77€
IRR	44.79%	36.48%	11.40%
PI	1.46	1.07	0.11
Payback	3 years	3 years	5 years
Payback discounted (8%)	3 years	3 years	5 years

As it is feasible to understand, for the three situations, NPV is positive, indicating potential to generate return. Regarding the IRR, for the three scenarios the value is higher than the cost of capital (that is equivalent to the weighted average cost per capital). As for PI, only for the pessimistic scenario this value is lower than 1. Regarding the Payback, in the worst scenario the investment would be paid in 5 years.

While the pessimistic scenario shows a very low PI and a longer Payback, it still presents a positive NPV and an IRR higher than the cost of capital. So, even a less favourable situation can recover from the investment in a reasonable time-frame. Taking into account the performance of the business in the pessimistic scenario and the positive financial indicators across the realistic and optimistic scenario, then it is viable to proceed with the investment, being important to continuously monitor the project's performance.

Chapter 5

Final Considerations

5.1 Conclusions

The current state of BA Store is not efficient, does not provide customers with convenience and flexibility and does not transmit any effective message or values to their visitors. The on-going operations are outdated and create a lot of bottlenecks for both customers and the operations team. The lack of a data-driven approach for stock while not keeping track of customers' demand, not having an updated portfolio that can be easily accessed by customers, not having a tool displaying alternative in-stock models for the ones that are out-of-stock, not keeping track of out-of-stock models that are more often requested and SAP operational limitations, consist some of the pain points that the existing business model faces. Moreover, the absence of a digital platform to give support to the physical store creates too much dependency between clients and a visit to the store, in order to complete a purchase. Having identified all of these points, a new business model has been developed.

The first stage of the project consisted in taking into action immediate improvements that would enhance the efficiency of the store, while the new business model was being developed. This resulted mainly in a better work environment in the warehouse, reducing inventory costs and gaining warehouse space. Moreover, it was possible to eliminate some SAP limitations that were assessed.

After this, then the actual development of the project took place. Initially, it was important to define who was the target to reach through the store. Afterwards, a market analysis was performed with the aim of understanding the consumption of glass packaging by segments. The output was positive with an increase in the consumption. It also helped to understand that demand varies across countries. Afterwards, a benchmarking analysis was performed, which was crucial to assess trends and gaps in the online business of glass packaging, in order to understand what kind of website should be created and what features should be included. The benchmark analysis allowed for the mapping of the BA Store website, where all purchases will take place. Following this, it was important to analyse historical data regarding pallets' orders, to better comprehend what kind of vehicles will have to be available to fulfill the delivery service that needs to be implemented. To finalize the business model, marketing strategies were defined, with the goal of giving visibility to the store and enhance the customer experience.

Once the business model was developed and the necessary investments were identified, it was then possible to perform an analysis of the investment project. To do so, an estimate of operating expenses was done as well as sales' projections. With the help of decision criteria, it was possible to assess that the new BA Store consists a viable project for BA Glass.

5.2 Future works

Initially the website will start running, having standardized content for all customers. After a certain period operating, a wealth of customers' data and insights will start being collected, presenting an opportunity to enhance various aspects of the business, from the content provided in the website, to the customer overall service, while identifying areas that may need improvement, such as streamlining navigation, simplifying the checkout process and enhancing the website's interface.

The customer journey inside the website will be traced down since the moment the visitor enters the website until leaving it. This will allow to understand each customers preferences, through their browsing behavior and purchasing patterns, allowing to provide customized content regarding promotions and product recommendations, improving the customer experience and making it more unique. Furthermore, adding virtual assistance to the website can improve customer service, by providing instant support.

Moreover, if the business model succeeds in the Iberian territory, then there is potential for expansion in other geographical areas. By catering the preferences of customers in each country, the online business can be customized to specific markets. In order to expand the business, it will be necessary a further knowledge to better comprehend in what areas would be feasible to expand and an adaption of the site content will need to be done.

Furthermore, after the business model is implemented and running smoothly then it will be necessary to start implementing reverse logistics. This will allow to establish a return policy, that does not exist at the moment, improving the customer service. Additionally, and since BA Glass already has a return flow of pallets, in order to re-use them, enhancing sustainability, this can also be applied to BA Store's customers that make orders of pallets.

Bibliography

Albrecht, C. C., Dean, D., and Hansen, J. (2003). Marketplace and technology standards for b2b. ecommerce: Progress and challenges. In *MIS Quarterly Special Issue on Standard Making, International Conference on Information Systems*, pages 188–209. Citeseer.

Anumba, C. J. and Ruikar, K. (2009). *e-Business in Construction*. John Wiley & Sons.

Bangs, D. (1995). Business planning guide–creating practical plans for your start-up ven-ture's success.

Brown, C. M. (1996). Do's and dont's of writing'a winning business plan. *Black Enterprise*, 26:114–116.

Burns, P. (1996). *"Small Business and Entrepreneurship"*. "Macmillan Education UK.

Chen, Y.-T. and He, Y.-S. (2009). Study on value alliance model: A new e-business model for enterprise. In *2009 International Symposium on Information Engineering and Electronic Commerce*, pages 388–392. IEEE.

Cheng, L.-C., Chen, K., Lee, M.-C., and Li, K.-M. (2021). User-defined swot analysis–a change mining perspective on user-generated content. *Information Processing & Management*, 58(5):102613.

Cohen, L. (2002). Writing your business plan. *Nature biotechnology*, 20(Suppl 6):BE33–BE35.

Cooper, G. (1989). *The Business Plan Workbook*. Prentice Hall.

Costa, J. and Castro, R. (2021). Smes must go online—e-commerce as an escape hatch for resilience and survivability. *Journal of Theoretical and Applied Electronic Commerce Research*, 16(7):3043–3062.

Davila, A., Gupta, M., and Palmer, R. (2003). Moving procurement systems to the internet:: The adoption and use of e-procurement technology models. *European management journal*, 21(1):11–23.

Doloto, U. and Chen-Burger, Y.-H. (2015). A survey of business models in ecommerce. In *Agent and Multi-Agent Systems: Technologies and Applications: 9th KES International Conference, KES-AMSTA 2015 Sorrento, Italy, June 2015, Proceedings*, pages 249–259. Springer.

Ehmke, C. and Akridge, J. (2005). *The elements of a business plan: First steps for new entrepreneurs*. Purdue University, Purdue Extension.

Farida, I. and Setiawan, D. (2022). Business strategies and competitive advantage: The role of performance and innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 8.

Fenech, C., Perkins, B., Thomson, R., and Atkins, F. (2016). Cx marks the spot: Rethinking the customer experience to win.

Gunasekaran, A., Marri, H., and McGaughey, R. (2002). E-commerce and its impact on operations management.

Günzel, F. and Holm, A. B. (2013). One size does not fit all—understanding the front-end and back-end of business model innovation. *International journal of innovation management*, 17(01):1340002.

Guţă, A. J. (2014). The role and importance of the business plan in starting and running a business opportunity. *Annals of the University of Petrosani. Economics*, 14:119–126.

Gutterman, A. (2023). Business plan preparation. *Available at SSRN 4411750*.

Haag, A. B. (2013). Writing a successful business plan: An overview. *Workplace health & safety*, 61(1):19–29.

Haryanti, T. and Subriadi, A. P. (2020). Factors and theories for e-commerce adoption: A literature review. *International Journal of Electronic Commerce Studies*, 11(2):87–106.

Hawkins, R. (2002). The phantom of the marketplace: Searching for new e-commerce business models. *Euro CPR*, 46:297–329.

Hisrich, R. D. (1992). The need for marketing in entrepreneurship. *Journal of Business & Industrial Marketing*, 7(3):53–57.

Hormozi, A. M., Sutton, G. S., McMinn, R. D., and Lucio, W. (2002). Business plans for new or small businesses: paving the path to success. *Management Decision*, 40(8):755–763.

Hu, X., Ocloo, C. E., Akaba, S., and Worwui-Brown, D. (2019). Effects of business-to-business e-commerce adoption on competitive advantage of small and medium-sized manufacturing enterprises.

Hussein, L. A., Baharudin, A. S., Jayaraman, K., and Kiumarsi, S. (2019). B2b e-commerce technology factors with mediating effect perceived usefulness in jordanian manufacturing smes. *Journal of Engineering Science and Technology*, 14(1):411–429.

Jewels, T. J. and Timbrell, G. T. (2001). Towards a definition of b2c & b2b e-commerce.

Jillek, M. (2016). Creating a business plan: How to write a business plan.

Karlsson, T. and Honig, B. (2009). Judging a business by its cover: An institutional perspective on new ventures and the business plan. *Journal of Business Venturing*, 24:27–45.

Kumar, S. and Petersen, P. (2006). Impact of e-commerce in lowering operational costs and raising customer satisfaction. *Journal of Manufacturing Technology Management*, 17(3):283–302.

Lawrence, S. and Moyes, F. (2004). Writing a successful business plan. *Business Plan Preparation*.

Lopes, M. D. S. (2018). *Análise de Projetos de Investimento*. U. Porto press.

Masciocchi, B. (2019). *How to make a business plan*, volume 179. Elsevier Inc.

Mashalah, H. A., Hassini, E., Gunasekaran, A., and (Mishra), D. B. (2022). The impact of digital transformation on supply chains through e-commerce: Literature review and a conceptual framework. *Transportation Research Part E: Logistics and Transportation Review*, 165.

Moriset, B. (2018). e-business and e-commerce.

Mourtzis, D., Angelopoulos, J., and Panopoulos, N. (2021). A survey of digital b2b platforms and marketplaces for purchasing industrial product service systems: A conceptual framework. *Procedia CIRP*, 97:331–336.

Namugenyi, C., Nimmagadda, S. L., and Reiners, T. (2019). Design of a swot analysis model and its evaluation in diverse digital business ecosystem contexts. *Procedia Computer Science*, 159:1145–1154.

Nunn, L., McGuire, B., et al. (2010). The importance of a good business plan. *Journal of Business & Economics Research (JBER)*, 8(2).

Ocloo, C. E., Xuhua, H., Akaba, S., Shi, J., and Worwui-Brown, D. K. (2020). The determinant factors of business to business (b2b) e-commerce adoption in small-and medium-sized manufacturing enterprises. *Journal of global information technology management*, 23(3):191–216.

Rhonda Abrams, E. K. (1991). *The successful business plan: Secrets Strategies*. Running 'R' Media.

Rua, O. L. and Santos, C. (2022). Linking brand and competitive advantage: The mediating effect of positioning and market orientation. *European Research on Management and Business Economics*, 28.

Schiavi, G. S. and Behr, A. (2018). Emerging technologies and new business models: a review on disruptive business models. *Innovation & Management Review*, 15(4):338–355.

Schwetje, G. and Vaseghi, S. (2007). The business plan: How to win your investors' confidence.

Siddiqui, A. A., Abbas, M., Idrees, M. A., Khan, A., and Minhas, A. A. (2022). Effects of e-procurement on supply chain management in the modern era. *International Journal of Social Science & Entrepreneurship*, 2(2):202–217.

Standing, S., Standing, C., and Love, P. E. (2010). A review of research on e-marketplaces 1997–2008. *Decision Support Systems*, 49(1):41–51.

Taher, G. (2021). E-commerce: Advantages and limitations. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 11.

Tokar, T., Jensen, R., and Williams, B. D. (2021). A guide to the seen costs and unseen benefits of e-commerce. *Business Horizons*, 64(3):323–332.

Toktaş-Palut, P., Baylav, E., Teoman, S., and Altunbey, M. (2014). The impact of barriers and benefits of e-procurement on its adoption decision: An empirical analysis. *International Journal of Production Economics*, 158:77–90.

Turley, B. (2001). The real promise of the net. *Advisor Today*, 96(6):28.

Vestal, K. (1988). Writing a business plan. *Nursing Economic*, 6(3):121–124.

Yazdanifard, R., Baruani, B. M., and Mohseni, S. (2012). Review of electronic data interchange in business to business e-commerce in a competitive global market. *RNIS: Research Notes in Information and Service Sciences*, 9(1):48–53.

Yu, Y., Wang, X., Zhong, R. Y., and Huang, G. Q. (2016). E-commerce logistics in supply chain management: Practice perspective. *Procedia Cirp*, 52:179–185.

Zhao, X., Zhao, H., and Hou, J. (2010). B2b e-hubs and information integration in supply chain operations. *Management Research Review*, 33(10):961–979.

Zou, P. X. and Seo, Y. (2006). Effective applications of e-commerce technologies in construction supply chain: current practice and future improvement. *Journal of Information Technology in Construction (ITcon)*, 11(10):127–147.

Appendix A

ABC Analysis

Figure A.1 demonstrates the ABC analysis conducted. The first column refers to the product ID of each pallet, the second column represents the share of sales in 2022 of each product, the third column represents the accumulated share and the forth column divides the stocks into different categories.

PRODUCT ID	% REVENUES	% ACCUMULATED	STOCK CATEGORY
1	34.627%	34.627%	
2	10.642%	45.269%	
3	10.408%	55.677%	
4	7.910%	63.587%	A
5	5.316%	68.903%	
6	5.068%	73.971%	
7	4.258%	78.229%	
8	4.095%	82.324%	
9	2.727%	85.051%	
10	2.527%	87.578%	
11	2.484%	90.062%	B
12	1.837%	91.899%	
13	1.675%	93.574%	
14	1.471%	95.045%	
15	1.350%	96.395%	
16	0.711%	97.106%	
17	0.606%	97.712%	
18	0.567%	98.279%	
19	0.555%	98.834%	
20	0.361%	99.195%	
21	0.253%	99.448%	
22	0.150%	99.598%	
23	0.095%	99.693%	
24	0.088%	99.781%	
25	0.065%	99.846%	C
26	0.061%	99.907%	
27	0.047%	99.954%	
28	0.024%	99.978%	
29	0.018%	99.996%	
30	0.000%	99.996%	
31	0.000%	99.996%	
32	0.000%	99.996%	
33	0.000%	99.996%	
34	0.000%	99.996%	

Figure A.1: ABC Analysis of 2022 sales of pallets in-stock.

Appendix B

Pallets Dimensions

It was important to study the dimensions of the pallets that have been ordered in the past years with the aim of improving the logistics regarding space utilization, optimal loading and cost-effective transportation. Figure B.1 sums up the main points.

Year	Min of Height of Pallet (mm)	Max of Height of Pallet (kg)	Average of Height of Pallet (kg)
2020	867	2286	1,517.91
2021	1022	2248	1,547.78
2022	867	2286	1,642.16

Year	Min of Weight of Pallet (mm)	Max of Weight of Pallet (kg)	Average of Weight of Pallet (kg)
2020	377	901	548.77
2021	381	932	587.02
2022	319	1050	598.04

Figure B.1: Dimensions of pallets ordered.

Appendix C

Income and Cash-Flow Statements

Figures C.1 and C.2 demonstrate the statements for the realistic scenario.

Realistic scenario						
Income Statement						
Year	0	1	2	3	4	5
Sales		669,561.92	769,996.20	793,096.09	801,027.05	801,427.56
Cost of Goods Sold		(227,651.05)	(261,798.71)	(269,652.67)	(272,349.20)	(272,485.37)
Operating expenses		(66,240.00)	(63,240.00)	(63,240.00)	(63,240.00)	(63,240.00)
EBITDA		375,670.86	444,957.49	460,203.42	465,437.85	465,702.19
Depreciation physical store		(18,000.00)	(18,000.00)	(18,000.00)	(18,000.00)	(18,000.00)
Depreciation warehouse		(21,000.00)	(21,000.00)	(21,000.00)	(21,000.00)	(21,000.00)
Depreciation website implementation		(17,200.00)	(17,200.00)	(17,200.00)	-	-
Depreciation office equipment		(500.00)	(500.00)	(500.00)		
Depreciation office furniture		(561.43)	(561.43)	(561.43)	(561.43)	(561.43)
EBIT	-	318,409.44	387,696.06	402,941.99	425,876.42	426,140.76
Taxes	-	(79,602.36)	(96,924.02)	(100,735.50)	(106,469.11)	(106,535.19)

Figure C.1: Income Statement - Realistic scenario.

Realistic scenario						
Cash Flow Map						
Year	0	1	2	3	4	5
Physical store	(360,000.00)					
Warehouse	(420,000.00)					
Website implementation	(51,600.00)					
Office equipment	(5,430.00)					
Investment Cash Flow	(837,030.00)	-	-	-	-	-
EBITDA		375,670.86	444,957.49	460,203.42	465,437.85	465,702.19
Taxes		(79,602.36)	(96,924.02)	(100,735.50)	(106,469.11)	426,140.76
Operational Cash Flow	-	296,068.51	348,033.48	359,467.92	358,968.75	891,842.95
Free Cash Flow to the Firm (FCFF)	(837,030.00)	296,068.51	348,033.48	359,467.92	358,968.75	891,842.95
Accumulated Cash Flow	(837,030.00)	(540,961.49)	(192,928.02)	166,539.90	525,508.65	1,417,351.60
Discounted FCFF (8%)	(837,030.00)	274,137.50	298,382.61	285,357.23	263,852.74	606,973.33

Figure C.2: Cash-Flow Statement - Realistic scenario.

Figures C.3 and C.4 demonstrate the statements for the optimistic scenario.

Optimistic scenario						
Income Statement						
Year	0	1	2	3	4	5
Sales		730,431.18	913,038.98	940,430.14	949,834.45	950,309.36
Cost of Goods Sold		(248,346.60)	(310,433.25)	(319,746.25)	(322,943.71)	(323,105.18)
Operating expenses		(66,240.00)	(63,240.00)	(63,240.00)	(63,240.00)	(63,240.00)
EBITDA		415,844.58	539,365.72	557,443.90	563,650.73	563,964.18
Depreciation physical store		(18,000.00)	(18,000.00)	(18,000.00)	(18,000.00)	(18,000.00)
Depreciation warehouse		(21,000.00)	(21,000.00)	(21,000.00)	(21,000.00)	(21,000.00)
Depreciation website implementation		(17,200.00)	(17,200.00)	(17,200.00)	-	-
Depreciation office equipment		(500.00)	(500.00)	(500.00)		
Depreciation office furniture		(561.43)	(561.43)	(561.43)	(561.43)	(561.43)
EBIT	-	358,583.15	482,104.29	500,182.47	524,089.31	524,402.75
Taxes	-	(89,645.79)	(120,526.07)	(125,045.62)	(131,022.33)	(131,100.69)

Figure C.3: Income Statement - Optimistic scenario.

Optimistic scenario						
Cash Flow Map						
Year	0	1	2	3	4	5
Physical store	(360,000.00)					
Warehouse	(420,000.00)					
Website implementation	(51,600.00)					
Office equipment	(5,430.00)					
Investment Cash Flow	(837,030.00)	-	-	-	-	-
EBITDA		415,844.58	539,365.72	557,443.90	563,650.73	563,964.18
Taxes		(89,645.79)	(120,526.07)	(125,045.62)	(131,022.33)	524,402.75
Operational Cash Flow	-	326,198.79	418,839.65	432,398.28	432,628.41	1,088,366.93
Free Cash Flow to the Firm (FCFF)	(837,030.00)	326,198.79	418,839.65	432,398.28	432,628.41	1,088,366.93
Accumulated Cash Flow	(837,030.00)	(510,831.21)	(91,991.56)	340,406.72	773,035.13	1,861,402.06
Discounted FCFF (8%)	(837,030.00)	302,035.92	359,087.49	343,251.69	317,994.79	740,724.25

Figure C.4: Cash-Flow Statement - Optimistic scenario.

Figures C.5 and C.6 demonstrate the statements for the pessimistic scenario.

Pessimistic scenario						
Income Statement						
Year	0	1	2	3	4	5
Sales		426,084.86	447,389.10	460,810.77	465,418.88	465,651.59
Cost of Goods Sold		(144,868.85)	(152,112.29)	(156,675.66)	(158,242.42)	(158,321.54)
Operating expenses		(66,240.00)	(63,240.00)	(63,240.00)	(63,240.00)	(63,240.00)
EBITDA		214,976.00	232,036.80	240,895.11	243,936.46	244,090.05
Depreciation physical store		(18,000.00)	(18,000.00)	(18,000.00)	(18,000.00)	(18,000.00)
Depreciation warehouse		(21,000.00)	(21,000.00)	(21,000.00)	(21,000.00)	(21,000.00)
Depreciation website implementation		(17,200.00)	(17,200.00)	(17,200.00)	-	-
Depreciation office equipment		(500.00)	(500.00)	(500.00)		
Depreciation office furniture		(561.43)	(561.43)	(561.43)	(561.43)	(561.43)
EBIT	-	157,714.58	174,775.38	183,633.68	204,375.03	204,528.62
Taxes	-	(39,428.64)	(43,693.84)	(45,908.42)	(51,093.76)	(51,132.15)

Figure C.5: Income Statement - Pessimistic scenario.

Pessimistic scenario						
Cash Flow Map						
Year	0	1	2	3	4	5
Physical store	(360,000.00)					
Warehouse	(420,000.00)					
Website implementation	(51,600.00)					
Office equipment	(5,430.00)					
Investment Cash Flow	(837,030.00)	-	-	-	-	-
EBITDA		214,976.00	232,036.80	240,895.11	243,936.46	244,090.05
Taxes		(39,428.64)	(43,693.84)	(45,908.42)	(51,093.76)	204,528.62
Operational Cash Flow	-	175,547.36	188,342.96	194,986.69	192,842.70	448,618.67
Free Cash Flow to the Firm (FCFF)	(837,030.00)	175,547.36	188,342.96	194,986.69	192,842.70	448,618.67
Accumulated Cash Flow	(837,030.00)	(661,482.64)	(473,139.68)	(278,152.99)	(85,310.29)	363,308.38
Discounted FCFF (8%)	(837,030.00)	162,543.85	161,473.73	154,786.72	141,745.14	305,322.33

Figure C.6: Cash-Flow Statement - Pessimistic scenario.