



ESCOLA
SUPERIOR
DE TECNOLOGIA
E GESTÃO



SIGE INC.

Sistemas de Informação para a
Gestão Empresarial

8170109
8180336
8200282
8200751
8200836
8220722

Bruno Teixeira
Catarina Marçal
Andreia Teixeira
Christian Gonçalves
Diogo Torres
Popov Sergei

8170109@estg.ipp.pt
8180336@estg.ipp.pt
8200282@estg.ipp.pt
8200751@estg.ipp.pt
8200836@estg.ipp.pt
8220722@estg.ipp.pt

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Introduction

This document arises in the context of the Business Management Information Systems curricular unit of the Systems and Information Management course, and it aims to apply and consolidate the curricular contents taught during the semester.

The work is based on the case study proposed by the teacher based on SIGE Inc., a small company based in Portugal, specializing in selling electronic equipment and services. The company started selling to students at Oporto University and has since grown to include other universities and companies. The owners, who were engineering students themselves, partnered with Student Associations in each region to promote their products and services. Their services include workshops on operating systems and infrastructure, system setups, and equipment support. They have a website and a physical store in Oporto, and they focus their promotional strategies on the specific needs of engineering students. Their support is provided by a combination of experienced technicians and freshman students. The website is full of helpful content, making it a valuable resource for students.

In the development of this project, we will elaborate on a Business Model Canvas (BMC) of SIGE Inc, as well as the rationale followed by the group for the posting and ERP configuration.

Later, we will approach some process descriptions and diagrams (end to end), mainly focused on the BPMN notation.

Finally, we will present some detailed financial reports resulting from all the ERP configurations.

Business Model Canvas

Key Partners <ul style="list-style-type: none">• Oporto University• Technical Schools• Students Associations	Key Activities <ul style="list-style-type: none">• Selling electronic equipment• Organizing workshops• Setting up systems• Providing equipment support	Value Proposition <ul style="list-style-type: none">• Experienced technical support• Easy access to helpful content• Specific needs of engineering students• Rich content website	Customer Relationships <ul style="list-style-type: none">• Personalized customer service• Online support• Technical workshops	Customer Segments <ul style="list-style-type: none">• Oporto University students• Other Universities students• Companies
	Key Resources <ul style="list-style-type: none">• Experienced technicians• Freshman students• Web and physical store		Channels <ul style="list-style-type: none">• Web• Physical store• Promotional partnerships• Student Associations	
Cost Structure <ul style="list-style-type: none">• Equipment and services pricing• Fees for workshops• System setups• Equipment support			Revenue Streams <ul style="list-style-type: none">• Equipment and services sales• Workshops fees• System setups fees• Equipment supports fees	

Processes description and Diagrams

1. Orders handling

One of the main processes in SIGE Inc. is order-to-cash, order handling. The process starts when the buyer places an order (on the buyer layer). The order is then transferred to the SIGE Inc. system (indicated by a gear wheel).

Once the order is received, the system checks the availability of the required items in stock, and if the stock is out of stock, the warehouse manager contacts the suppliers about the possibility of obtaining the items. If this is not possible, the order is canceled. If it is possible to deliver the required goods, an invoice is created, and delivery is awaited.

When the product appears in stock or if it has already been there, the order is confirmed, and payment is awaited. An invoice is created for the buyer and the goods are sent to the buyer together with them. After confirmation of receipt of the order and if there are no complaints, the order is closed.

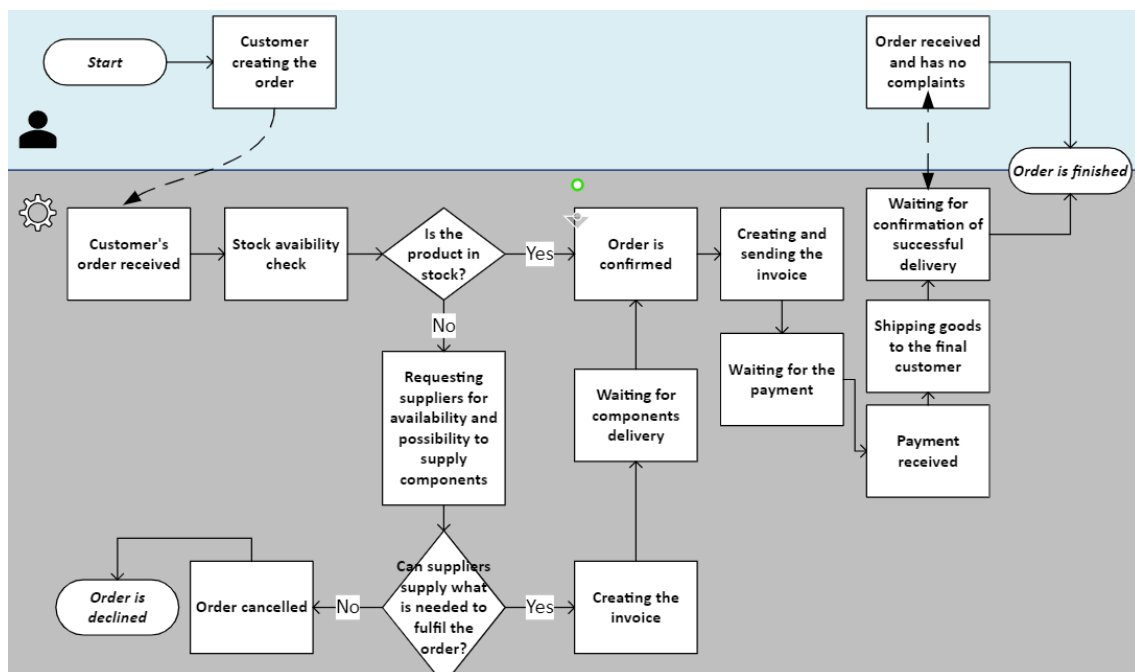


Figure 1 - Order handling

2. Complaint handling

Another main process of SIGE Inc. is complaint handling, how the organization handles the complaints from their delivered products and services.

The process starts if a customer has a complaint about a delivered product, they will leave it and it will be transmitted to the system.

First, the validity of the complaint will be checked; if the complaint is unfounded, the customer will be informed of the reason for rejecting the complaint. If the complaint is approved, it is forwarded to the relevant department. There they investigate the complaint, find a solution, and resolve the problem.

After that, the decision and possible options are communicated to the client.

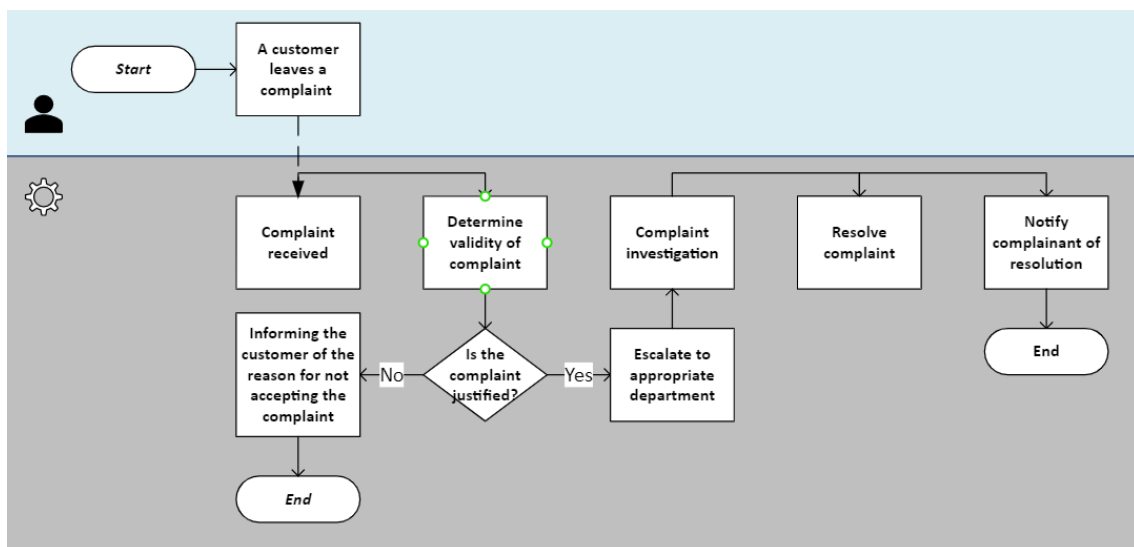


Figure 2 - Complaint handling

3. Restock and communication with suppliers

Work with suppliers is carried out as follows. First, the warehouse manager conducts a check on the need for restocking. If the warehouse needs to be restocked, the company contacts the suppliers to place a new delivery order. If the suppliers are unable to supply the required goods, a new supplier is sought. When the purchase order is approved, payment is made, an invoice is created, and delivery is expected. When the necessary goods have been delivered by the suppliers, the warehouse manager updates the warehouse inventory.

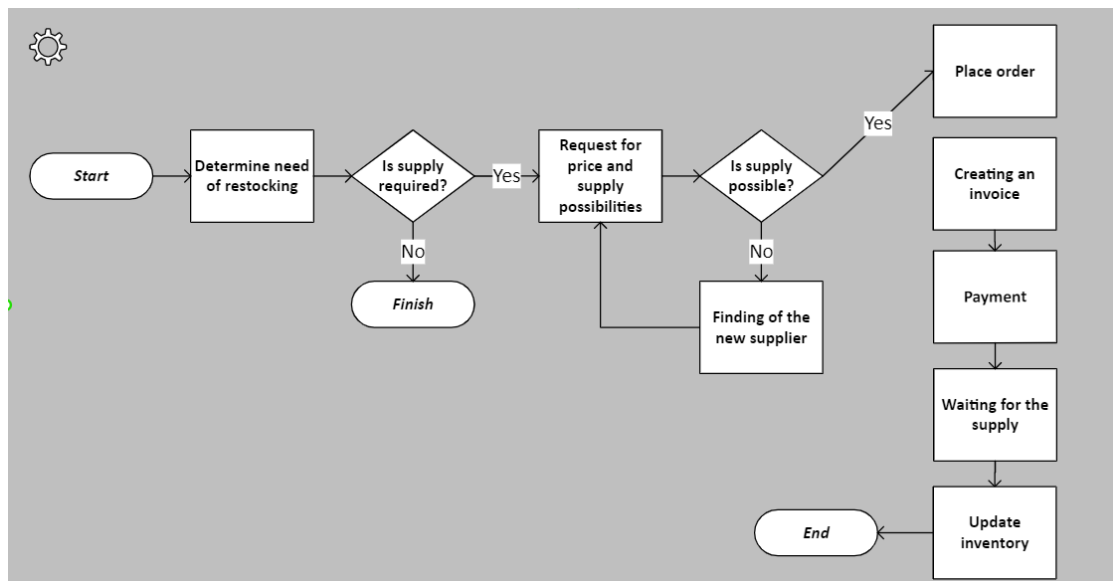


Figure 3 - Suppliers handling

Profit and Loss Account (P/L)

The profit and loss account (P/L) is based on a group of calculations that were made based on the provided data, such as COGS gross margin (37%), and personnel costs, among other information.

For each semester and month were made some calculations considering the data already filled in, by this, we applied the financial information given and other details to that data to calculate the missing values.

Despite the estimates made, there was a manual settlement of accounts for the values to be in line with the information given. In this way, there may be errors in accounting.

The information and data calculated in this step will be used to configure ERP.

The following link will lead to the google drive containing the original Excel sheet used in this report: [Case Study TOC SIGE.xlsx \(sharepoint.com\)](#)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Sales	10000	20415	14385	10660	10500	10840	8000	10980	8220	10000	21000	25000	160000
Cost of goods sold	7000	10724	10500	9160	6000	5000	5600	5536	6000	6000	14280	15000	100800
Third-party supplies and services	6995	0	4385	3000	0	0	3000	3000	1220	0	0	5000	
Personnel costs	4196	1500	1500	0	0	2340	2000	4744	2000	2000	720	2000	21000
EBITDA	500	-500	-2000	-1500	4500	3500	-2600	-2300	-1000	2000	6000	3000	
Amortization and depreciation	0	0	0	0	0	0	0	0	0	0	500	1000	
Impairment of depreciable or amortizable assets	0	0	0	0	0	0	0	0	0	0	0	500	
EBIT	500	-500	-2000	-1500	4500	3500	-2600	-2300	-1000	2000	5500	1500	
Interest income	0	0	0	0	0	0	0	0	0	0	0	0	
Interest expenses	0	0	0	0	0	0	0	0	0	0	0	500	
EBT	500	-500	-2000	-1500	4500	3500	-2600	-2300	-1000	2000	5500	1000	7100
Corporate Income tax													
Net income	395	-500	-2000	-1500	3555	2765	-2600	-2300	-1000	2000	5500	1000	
	28% = 44800 €			20% = 32000 €			17% = 27000 €			35% = 56000 €			

COGS
100 800 €

Total Personnel Costs
21 000 €

Corporate Income tax
1 491 €

EBITD A
6% of sales

Posting and ERP Configuration

For this step, we need to create an initial cash balance of 200k, so that everything, after is rightly implemented, so next up, is creating some series for our ERP.

Every series refers to geographical locations that our enterprise has business with:

Table 1 - Series description

Acronym ID	Location
OPO	Oporto
LX	Lisbon
ALG	Algarve

After creating these series, the next step is creating the client base of SIGE Inc.:

Table 2 - Client base description

Customer	NIF	Serie
EasyPal SA	508591619	ALG
EletoFixe SA	509638830	ALG
Remos SA	500153655	ALG
LapisCan Inc.	501842020	LX
TransAm Inc.	500636699	LX
VimisoaTECH Inc.	506422062	LX
Joel Dias LDA	501289240	OPO
SOLEMP LDA	509006302	OPO
TriAUTO LDA	508196213	OPO
Vessestes LDA	509306250	OPO

Now that our customers are registered in the ERP, we proceed to create our supplier base:

Table 3 - Supplier base description

Supplier	NIF
Apple	501271830
HP	508253144
Linksys	501763449
Microsoft	504074334
Samsung	505143925
TP-Link	503136638

Quick note: The families have been created at the same time as the products so that we categorize every single one of the products the right way.

Finally, we come to the core of the business which is the products and services that SIGE Inc. provides. Every relevant product or service information is stated in the upcoming tables starting with the products table and then the services provided table:

Table 4 - Products description

Products	Price	Family	ID	Buying Price
MacBook Pro 14inch	2 000 €	Computers	501501	1 260 €
MacBook Pro 16inch	2 400 €	Computers	501502	1 512 €
MacBook Pro 13inch	1 300 €	Computers	501503	819 €
Microsoft Surface Pro 9	1 000 €	Computers	501504	630 €
Microsoft Surface Laptop 5	900 €	Computers	501505	567 €
Microsoft Laptop Go 2	500 €	Computers	501506	315 €
Samsung Odyssey 32"	300 €	Displays	501507	189 €
Samsung LF24T374FWR 24"	150 €	Displays	501508	95 €
TP-Link Mesh AX3000	400 €	Network	501509	252 €
Linksys Mesh AC6600	240 €	Network	501510	151 €
HP Deskjet 2320	80 €	Printers	501511	50 €
HP Officejet PRO 8210	100 €	Printers	501512	63 €

Table 5 - Services provided a description

Services	Price	Family	ID
System Setup (hour)	100 €	Setup	201501
Equipment Support (hour)	150 €	Support	201502
Workshops about Systems and Infrastructures (uni)	750 €	Workshops	201503

Now we are set to start processing the SIGE inc. invoices. We start by executing the purchasing invoices so we can register the stock replenishment needed to satisfy our customer orders. Also, we had to consider that SIGE Inc purchases with 60 days payment conditions and sells equipment on cash. The following invoice is served as an example of a purchasing invoice:



Empresa Bruno Teixeira

Think Big, Start Small.

Avenida Barbosa du Bocage, 45
1049-013 Lisboa, Portugal

Tlf: 919199911
Fax: 255255255
Email: support@sige.com
Cons. Reg. Comercial: 1213123 - 13435553
Empresário em Nome Individual
NIF: PT273249959
CS: 200000,00 Eur

www.sige.pt

Fatura de compra	Data	Moeda
FC OPO/12	2022-04-01	EUR
Original	Data de Vencimento	
	2022-05-31	

Fornecedor

Microsoft

Morada

Rua das tecnologias de ontem,
Lisboa
1950-014 Lisboa, Portugal

NIF

PT504074334

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Código	Descrição	Qtd. Uni.	Preço uni.	IVA	% Desc.	Valor sem iva
501504	Microsoft Surface Pro 9	3,00 un	630,00	23%		1.890,00
501505	Microsoft Surface Laptop 5	1,00 un	567,00	23%		567,00
501506	Microsoft Laptop Go 2	4,00 un	315,00	23%		1.260,00

**Documento emitido para fins
de Formação**

Taxa	Base	Valor
23%	3.717,00	854,91

Emitido por programa certificado nº 1662/AT - Ensino (Powered by
- TOConline)

Total IVA	854,91
------------------	--------

Descontos de linha	0,00
---------------------------	------

Total Líquido	3.717,00
----------------------	----------

Total	4.571,91
--------------	-----------------

Este documento não serve de fatura

Figure 4 – Purchasing Invoice Example

After the purchasing invoices, we need to get our order sorted out. So, we start by getting our sales invoices checked and done, with the condition that every piece of equipment sold is paid in cash immediately and services have to be paid within 30 days. The following invoice is served as an example of a sales invoice:



Empresa Bruno Teixeira

Think Big, Start Small.

Avenida Barbosa du Bocage, 45
1049-013 Lisboa, Portugal

Tlf: 919199911
Fax: 255255255
Email: support@sige.com
Cons. Reg. Comercial: 1213123 - 13435553
Empresário em Nome Individual
NIF: PT273249959
CS: 200000,00 Eur

www.sige.pt

Fatura	Data	Moeda
FT OPO/3	2022-02-18	EUR
Original	Data de Vencimento	
	2022-02-18	

Cliente

TriAUTO LDA

Morada

Rua das matreiras, PORTO
3720-461 Areosa - PINHEIRO DA
BEMPOSTA, Portugal

NIF

508196213

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Código	Descrição	Qtd. Uni.	Preço uni.	IVA	% Desc.	Valor sem iva
501505	Microsoft Surface Laptop 5	1,00 un	900,00	23%		900,00
501512	HP Officejet Pro 8210	1,00 un	100,00	23%		100,00

Documento emitido para fins de Formação

Taxa	Base	Valor
23%	1.000,00	230,00

G/7w - Processado por programa certificado nº 1662/AT - Ensino
(Powered by - TOConline)

Total IVA	230,00
Descontos de linha	0,00
Total Líquido	1.000,00
Total	1.230,00

Os artigos/serviços faturados foram colocados à
disposição do adquirente na data do documento
(Alínea f do N.º 5 do Art.º 36 CIVA).

Figure 5 - Sales Invoice Example

After validating and finalizing all purchase orders and sales invoices, the expenses for salaries and external services payable were entered and validated according to the data in Excel.

Empresa Bruno Teixeira NIF: 273249959

Diário SLR - Salários		Tipo Documento PGTS - Pagamento de salários		Diário SLR 12/1		Documento PGTS PGTS 2022/10	
Data Lançamen... 31/12/2022	Data Documento 31/12/2022	Moeda EUR					
Descrição Pagamento de salários				Vossa Ref.		Débito 2.000,00	Crédito 2.000,00
Controlo Terceiros Sem controlo				Finalizado			
Movimentos							
Conta	Descrição	Débito	Crédito	Cód.IVA			
6321	Pagamento de salários	2.000,00					
12999	Pagamento de salários		2.000,00				

Figure 6 - Personnel Costs Example

Empresa Bruno Teixeira NIF: 273249959

Diário DIV - Diversos		Tipo Documento DSP - Despesas		Diário DIV 11		Documento DSP DSP 2022/11	
Data Lançamen... 31/12/2022	Data Documento 31/12/2022	Moeda EUR					
Descrição Despesas				Vossa Ref.		Débito 500,00	Crédito 500,00
Controlo Terceiros Sem controlo				Finalizado			
Movimentos							
Conta	Descrição	Débito	Crédito	Cód.IVA			
6918	Despesas	500,00					
12999	Despesas		500,00				

Figure 7 - Third party supplies and services Costs Example

After inserting all the expenses related to the above-mentioned and the taxes that the company has to pay, the company's activity was calculated and closed to be able to extract the financial reports.

Detailed financial reports

Considering the calculations made and what was recorded in the TOC, it was possible to produce the following profit and loss statement:

Empresa Bruno Teixeira

NIF: 273249959

Demonstração dos resultados por naturezas em 31 de dezembro de 2022

(em euros)

Rendimentos e Gastos	Notas	2022	2021
Vendas e serviços prestados		160.060,00	
Subsídios à exploração			
Variação nos inventários da produção			
Trabalhos para a própria entidade			
Custo das mercadorias vendidas e das matérias consumidas		(91.230,90)	
Fornecimentos e serviços externos		(26.580,00)	
Gastos com o pessoal		(23.000,00)	
Imparidade (perdas / reversões)		(500,00)	
Provisões (aumentos / reduções)			
Outros rendimentos			
Outros gastos			
Total resultado antes de depreciações, gastos de financiamentos e impostos		18.749,10	
Gastos / reversões de depreciação e de amortização		(1.500,00)	
Total resultado operacional (antes de gastos de financiamentos e impostos)		17.249,10	
Gastos de financiamento (líquidos)		(500,00)	
Total resultado antes de impostos		16.749,10	
Imposto sobre o rendimento do período			
Total resultado líquido do período		16.749,10	

Figure 8 - Detailed Financial Report (1)

Regarding this results demonstration, there is an error of 60 euros in terms of sales, this error may have been caused by a human error as a distraction in the insertion of values.

Regarding personnel costs, the amount foreseen in excel would be 21,000 euros, but considering the previous statement, there is a total of 23,000 in personnel costs, an additional 3,000 euros to this expense.

Finally, in the costs from thirds party supplies and services, the sum of this value calculated in excel would be 26600 euros, while in the TOC it resulted in a total of 26580 euros, 580 euros more than calculated.

In summary, there is a small difference between the values calculated in Excel and the results in the TOC which may stem from human error such as distraction or errors in entering the values into the system.

Balanço em 31 de dezembro de 2022

(em euros)

Rubrica	Notas	2022	2021
ATIVO			
Ativo não corrente			
Ativos fixos tangíveis			
Ativos intangíveis			
Investimentos financeiros			
Créditos e outros ativos não correntes			
Total ativo não corrente			
Ativo corrente			
Inventários			
Clientes		59.040,00	
Estado e outros entes públicos		20.983,11	
Capital subscrito e não realizado			
Diferimentos			
Outros ativos correntes			
Caixa e depósitos bancários		(26.460,21)	
Total ativo corrente		53.562,90	
Total ativo		53.562,90	
CAPITAL PRÓPRIO E PASSIVO			
Capital próprio			
Capital subscrito			
Outros instrumentos de capital próprio			
Reservas			
Resultados transitados			
Outras variações no capital próprio			
Resultado líquido do período		16.749,10	
Total capital próprio		16.749,10	
Passivo			
Passivo não corrente			
Provisões			
Financiamentos obtidos			
Outras dívidas a pagar			
Total passivo não corrente			
Passivo corrente			
Fornecedores			
Estado e outros entes públicos		36.813,80	
Financiamentos obtidos			
Diferimentos			
Outros passivos correntes			
Total passivo corrente		36.813,80	
Total passivo		36.813,80	
Total capital próprio e passivo		53.562,90	

Figure 9 - Detailed Financial Report (2)

There follows a final balance of the year's activity automatically produced by the TOC.

Additionally, the TOC allows us to visually see the progress of the company throughout the year of activity, producing a graph on the monthly situation, one on the accumulated situation, and one on the company's cash flow.

The first graph relates to the monthly situation of the company, where at the start of the quarter it is possible to see a high spending peak. This peak is because the stock requests, the placing of orders, were made in the first month of each quarter, i.e., in January, March, July, and October.

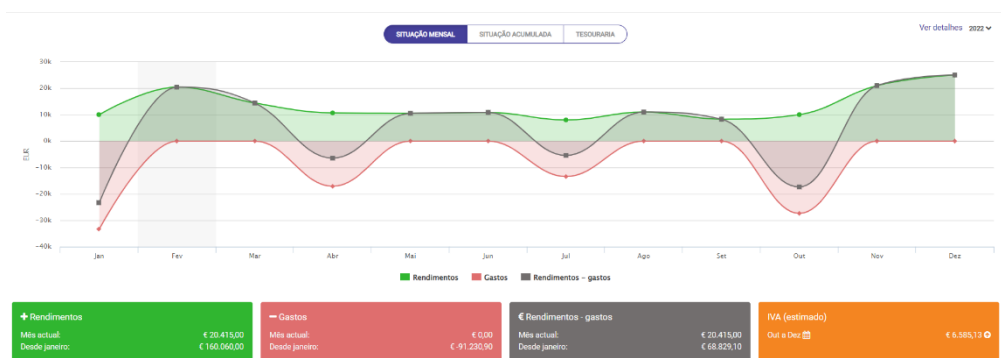


Figure 10 - Monthly Situation Graph

The second graph produced is for the summary of income and expenditure.

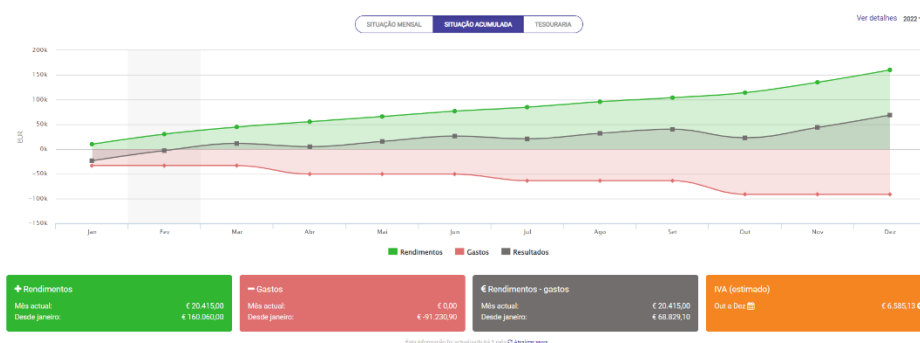


Figure 11 - Cumulative Situation Graph

Finally, the third graph relates to the company's treasury and shows all the parameters of cash outflows and inflows, as well as balance forecasts.

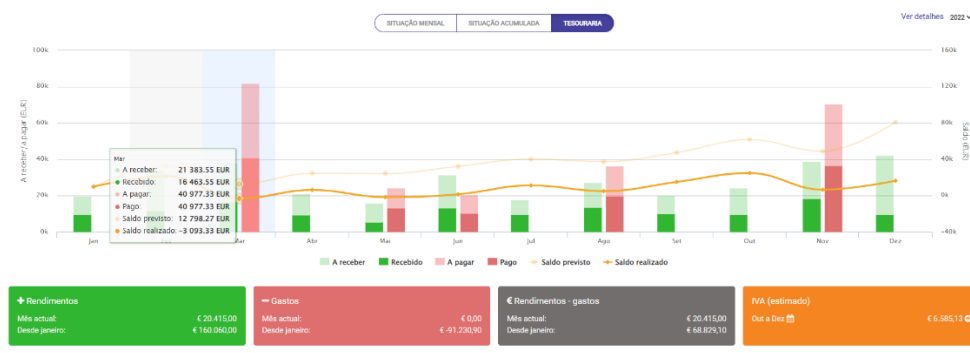


Figure 12 - Treasury Graph

Conclusion/Final Thoughts

In conclusion, implementing because significant benefits to a company by improving the management of core business processes, providing a centralized view of business data, and enabling better decision-making. However, the success of an ERP implementation depends on several factors, including careful planning.

Relatively to this work, the biggest difficulties were felt in the part of accounting calculations to fill in excel to be able to fill in all the necessary fields required by the ERP.

In the ERP part, for the concretion of most of the parameters, previous research was made in manuals on how to configure the ERP correctly to fulfill most of the requirements demanded by the teacher.

We have accomplished every stated objective in the excel part, however, the transition to the ERP was a difficult process. In the ERP we achieved the wanted invoicing of 160.000€. So, the distribution throughout the quarters were processed by 20 invoices and by creating and taking advantage of every supplier in every quarter. We also took into consideration the payment and sales policies stated by the professor and we delivered them while invoicing, specifically, 30% of the total sales invoices aren't paid yet and 20% of the invoicing are related to services.

On the other hand, in the ERP we haven't granted the Gross Margin dos Costs of Goods Sold (COGS) wanted by the teacher and we couldn't make sure that neither the Personnel costs were satisfactory nor the achieved 6% EBITDA on total sales. Regarding the Corporate income tax payment, we tried to deliver it, but it doesn't appear visible in the income statement.

In conclusion, several difficulties were experienced throughout the realization of this work, pointing out that some data was adjusted manually and thus is not entirely correct.

For future work, it is the team's interest to work more deeply and accurately on the calculations of excel, and accounting part, since the knowledge in the area is superficial and premature. Relatively to the TOC online, it is considered of interest to explore other functionalities still unknown to produce a thorough simulation of the functioning of an ERP in a company.