Business Cash Flow

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Summary

Introduction

The "Business Cash Flow" project is a tool developed to assist in the efficient financial management of a company. Developed with the aim of facilitating the control of cash inflows and outflows, it provides a clear view of revenue and expenses, allowing for a precise analysis of the financial health of the business.

In addition to simplifying the tracking of cash flow, the project also aims to demonstrate the skills I acquired throughout the course "Excel - From Basic to Advanced," taught by Dr. Nélio Alves, a doctor in Software Engineering. During the course, fundamental knowledge of spreadsheets was enhanced, and advanced techniques for data analysis were explored, making it possible to create effective and customized reports.

Various technical tools were used in the project, such as the use of macros, mathematical formulas like SUM and SUMIFS, statistical formulas like COUNT.VALUES and MAX, lookup and reference formulas like OFFSET, MATCH, and VLOOKUP, logical formula IF, pivot tables, and charts.

By adding the project to my portfolio, I highlight not only the ability to develop practical and functional solutions but also the direct application of acquired knowledge in a real business context. Through this initiative, I aim to demonstrate my aptitude in using technological tools to optimize processes, analyze data, and assist in companies' decision-making.

Description of functionalities

The workbook can be divided into three categories. Each category contains spreadsheets related to its category. The workbook is divided as follows:

1. **Records**
    a. Record entries and expenses
    b. Complete record of entries and expenses
    c. Record of bases and sellers
2. **Reports**
    a. General cash flow and monthly result
    b. Individual details
    c. Accounts payable and accounts receivable
3. **Dashboard**
    a. Dynamic panels

Records

Consists of the database on which all other functions of the workbook are based. In this category, we can access the complete database of entries and exits through the options "Income Records" and "Expense Records", respectively.

It is also possible to insert new data into their respective databases through the options "Insert Entries" and "Insert Expenses", just enter the data in the highlighted fields and click on the REGISTER option.

In the menu of the options "Insert Entries" and "Insert Expenses", we can find the option "Income Plan" or "Expense Plan" (depending on the menu the user is in), which are small tables containing the possible types of cash inflow or outflow. These tables are classified as level 1 and level 2, and the level 2 data are specifications of the categories presented in level 1.

In this set of functions, we can also find a database containing information about operational bases and their respective employees, just click on the option "Base and Seller Record".

Reports

Set of functions that seek to transform the data into more accessible information, enabling the obtaining of insights. In this category, we can access a monthly summary of all entries and exits by clicking on the option "Cash Flow and Monthly Result". In this menu, it is possible to change the year in which the months are being shown by clicking on the options "Next Year" and "Previous Year".

The details are more specific reports about each aspect that makes up the overall result. Each detail contains filter options at the top that allow you to view only the relevant information for the user. The detail options are as follows:

• Entry Details: Contains the total value of all entries in the month and their categories.

• Expense Details: Contains the total value of all exits in the month and their categories.

• Base Entry Detail: Contains the total value of all entries in the month and their category (only level 1) for each operational base.

• Base Expense Details: Contains the total value of all exits in the month and their category (only level 1) for each operational base.

• Sellers Detail: Contains the total sales value in the month for each seller of each operational base.

In the reports, we can also find the options "Payable", "Receivables" and "Overdue Receivables". These options contain details such as month, values, year, and categories of accounts that have not been paid, either by the company or by third parties.

Dashboard

The dashboard summarizes relevant information in the form of charts. These charts are automatically updated when new data is entered or when the user changes their filter. By clicking on the option "Annual Financial Dashboard", we are directed to a new screen that contains the following information and charts:

• Cash balance: It is the capital accumulated by the company until the end of the selected year, or until the current date in cases where the year has not ended yet. This value is calculated based on the entries and exits of each month and the balance from the previous month.

• Payables: It is the total amount of purchases that the company has not yet paid by the end of the selected year.

• Receivables: It is the total amount of sales that the company has not yet received payment for by the end of the selected year.

• Top selling categories: Calculates the percentage of each category in the company's product sales and summarizes them in a pie chart.

• Bases with best performance: Calculates the total value that each base sold throughout the year and shows the top three results.

• Sales evolution: Shows in a line chart the total sales of the chosen category in each month throughout the year. It is possible to select the category the user wants to view the data for by clicking on the selection box in the upper right corner of the chart box. It is also possible to view the total sales value of the chosen category for the year.

• Base performance: Shows in a line chart the total sales of the chosen base in each month throughout the year. It is possible to select the base the user wants to view the data for by clicking on the selection box in the upper right corner of the chart box. It is also possible to view the total sales value of the chosen base for the year.

Description of the creation process

Starting from the subtitle below, each subtitle in this chapter will have the name of a worksheet from the workbook, and the content immediately following it will be a description of the creation process of that worksheet.

Important information

The order in which each action is described does not necessarily define the chronological order in which it was performed.

The vast majority of the worksheets were created as soon as the project started, but some of them were added later. For the sake of reading optimization, the insertion of new worksheets will not be described in this document.

Some worksheets that will not be used by the user have been hidden.

Although each worksheet in the workbook has a specific function, they all share common characteristics. These characteristics will be disregarded when detailing the construction of each worksheet. The common characteristics are:

- Gridlines have been hidden.
- Unused rows and columns have been hidden.
- The first two and last two rows have the same fill color.
- The first two rows have been merged, and the text has been aligned to the right.
- A title corresponding to the worksheet is inserted in the first two rows.
- All worksheets have a navigation bar at the top with at least one button of the same color, and all these buttons contain a hyperlink that takes the user to the worksheet corresponding to the value written on the button. (Except for the worksheet "Start").
- The default font for all strings is "Calibri" (except for the year in the "Consolidated_Flow" and "CurrentFinancialData" worksheets).

Start

- Merged and changed the fill color of some cells.
- Inserted 15 shapes (Rounded Rectangle).
- Wrote the necessary text.
- Inserted a hyperlink in each shape that takes the user to the corresponding worksheet described in the shape.

Insert_Entries

- Merged and changed the fill color of some cells.
- Added an additional button to the navigation bar.
- Inserted 1 shape (Rectangle) to become the "Register" button.
- Wrote the necessary text.
- Used a data validation (list type) in cell F9 that retrieves data from the "tbEntriesL1" table.
- Used a data validation (list type) in cell I9 that uses the following formula:

```
=IF($F$9=IncomePlan!$E$10;IncomePlan!$G$10;IF($F$9=IncomePlan!$E$11;IncomePlan!$G$11;IF(F9=IncomePlan!$E$12;IncomePlan!$G$12;IF(F9=IncomePlan!$E$13;IncomePlan!$G$13:$G$17;""))))

## This formula allows for the retrieval of data from a table in the validation based on the options chosen in another cell.
```

- Used a data validation (list type) in cell I12 that retrieves data from a range in the "RBV" worksheet.
- Used a data validation (list type) in cell I15 that uses the following formula:

```
=OFFSET(RBV!A5;1;MATCH(I12;RBV!A5:I5;0)1;COUNT.VALUES(OFFSET(RBV!A5;1;MATCH(I12;RBV!A5:I5;0)-1;15)))

##This formula allows for the retrieval of data from a table in the validation based on the options chosen in another cell.
```

- The I15 field can be mandatory or not depending on the user's choice in cell F9, so I used the following formula in J14:

```
=IF(F9=IncomePlan!E13;"*";"")
```

- Created a macro using VBA to automate the data insertion in the record table and assigned it to the "Register" button. The macro code was provided as a separate attachment to facilitate document readability.

IncomePlan e ExpensePlan

- Added an additional button to the navigation bar.
- Wrote the necessary text.
- Converted the data range into a table.

Insert_Expenses

- Merged and changed the fill color of some cells.
- Added an additional button to the navigation bar.
- Inserted 1 shape (Rectangle) to become the "Register" button.
- Wrote the necessary text.
- Used a data validation (list type) in cell F9 that retrieves data from the "tbExpenseL1" table.
- Used a data validation (list type) in cell I9 that uses the following formula:

```
=IF(F9=ExpensePlan!G11;ExpensePlan!I11:I15;SE(F9=ExpensePlan!G12;E
xpensePlan!I16:I17;SE(F9=ExpensePlan!G13;ExpensePlan!I18:I19;SE(F9
=ExpensePlan!G14;ExpensePlan!I20;SE(F9=ExpensePlan!G15;ExpensePlan
!I21;SE(F9=ExpensePlan!G16;"";""))))))
```

```
## This formula allows for the retrieval of data from a table in
the validation based on the options chosen in another cell.
```

- Used a data validation (list type) in cell I12 that retrieves data from the "tbRBV" table.
- Created a macro using VBA to automate the data insertion in the record table and assigned it to the "Register" button. The macro code was provided as a separate attachment to facilitate document readability.

IncomeRecords e ExpenseRecords

- Added an additional button to the navigation bar.
- Copied fictitious data generated by the website Generatedata.com to the worksheet and converted it into a table.
- Hid columns in the table that are not useful for the user (only used for formula application).

Consolidated_Flow

- Added two additional buttons to the navigation bar.
- Wrote the necessary text.
- Created a macro using VBA that allows changing the year in the worksheet by simply clicking on the navigation bar buttons. The macro code was provided as a separate attachment to facilitate document readability.
- Created mathematical calculations for various cells using the SUMIFS formula and the "+" and "-" operators. Some examples of formulas are:

```
=SUMIFS(tbIncomeRecords[VALUE];tbIncomeRecords[CASH
YEAR];"="&$L$3;tbIncomeRecords[CASH MONTH];"="&E7)
```

```
=SUMIFS(tbIncomeRecords[VALUE];tbIncomeRecords[[COMPETENCE MONTH
]];"="&E14;tbIncomeRecords[COMPETENCE YEAR];"="&$L$3)
```

```
=SUMIFS(tbIncomeRecords[VALUE];tbIncomeRecords[CASH
YEAR];"<"&$L$3;tbIncomeRecords[CASH YEAR];"<>0")-
SUMIFS(tbExpenseRecords[VALUE];tbExpenseRecords[CASH
YEAR];"<"&$L$3;tbExpenseRecords[CASH YEAR];"<>0")
```

```
=B15+B16-B17
```

- Used the IF conditional formula to check if certain values fall within the "Losses" or "Profits" range. Some examples of formulas are:

```
=IF(B22-B23>0;B22-B23;0)
```

```
=IF(B22-B23<0;B22-B23;0)
```

RevenueDetails, EarningBases, SellersDetails, Receivables and ReceivablesVen

- Created a pivot table using the "tbIncomeRecords" table and set up its field list and grand totals based on the function of each worksheet.
- Inserted 3 data slicers to assist the user in filtering the results based on what they want to visualize.

ExpenseDetails, ExpenseBases e Payables

- Created a pivot table using the "tbExpenseRecords" table and set up its field list and grand totals based on the function of each worksheet.
- Inserted 3 data slicers to assist the user in filtering the results based on what they want to visualize.

CurrentFinancialDataT

- Created this worksheet to store and calculate the data that will be provided to the Dashboard.
- Created various mathematical calculations using the SUMIFS and SUM formulas, and the "+" and "-" operators. Some examples are:

```
=SUMIFS(tbIncomeRecords[VALUE];tbIncomeRecords[CASH YEAR];"="&C4)
```

```
=SUMIFS(tbExpenseRecords[VALUE];tbExpenseRecords[DATE OF CASH
PERFORMED];"N/A";tbExpenseRecords[FORECAST
YEAR];"="&$C$4;tbExpenseRecords[FORECAST MONTH];F5)
```

```
=SUM(O5:O16)
```

```
=C8+C9-C10
```

- Used the IF conditional formula to prevent the charts from using null values. An example is:

```
=IF(J5=0;NA();J5)
```

- Used the VLOOKUP and MAX lookup and reference formulas to provide ranking data. Some examples are:

```
=MAX(B20:B28;1)  and  =VLOOKUP(H20;$B$20:$C$28;2;FALSE)
```

CurrentFinancialData (Dashboard)

- Added two additional buttons to the navigation bar and assigned the macro that allows changing the year (previously mentioned).
- Merged and centered various cells.
- Highlighted the borders of various ranges.
- Changed the color and text size of various cells.
- Used a data validation (list type) in cell M6 that retrieves data from the "tbEntriesL1" table.
- Used a data validation (list type) in cell M19 that retrieves data from the "RBV" table.
- Inserted a line chart that uses the range K5:L16 from the "CurrentFinancialDataT" worksheet.
- Inserted a line chart that uses the range M5:N16 from the "CurrentFinancialDataT" worksheet.
- Inserted a bar chart that uses the range G20:H22 from the "CurrentFinancialDataT" worksheet.
- Inserted a pie chart that uses the range J20:K24 from the "CurrentFinancialDataT" worksheet.
- Used various cell references in the "CurrentFinancialDataT" worksheet to represent total values.

References

- GenerateData (https://generatedata.com/) to obtain fictitious sample data.
- Excel COMPLETO do Básico ao Avançado course (https://www.udemy.com/course/excel-curso-completo/) for project-oriented guidance.
- Excel support platform (https://support.microsoft.com/pt-pt/excel) for technical questions and assistance.

Final Considerations

In this project, I was able to explore and apply various concepts learned in the "Excel Completo" course taught by Dr. Nélio Alves. Through this tool, it is possible to monitor and control the inflows and outflows of resources, assisting in strategic decision-making.

Throughout the development of the project, I faced challenges and learned to use various technical tools. With the guidance of Dr. Nélio, I was able to understand the essential details for an efficient cash flow, such as proper transaction recording, trend analysis, and projection of future flows.

I would like to take this opportunity to thank the readers who were interested in my work. Your interest and support are essential for my growth and continuous encouragement in the pursuit of excellence in future projects.

In conclusion, this project on Business Cash Flow in Microsoft Excel was an enriching and rewarding experience. I thank Dr. Nélio again for his teachings and all the readers for their demonstrated interest.