

User Manual for the MABAC Application

1. INTRODUCTION

This manual provides guidance on using the Multi-Attributive Border Approximation Area Comparison (MABAC) application, a multi-criteria decision-making method. Here you will learn how to fill out the standard spreadsheet (available for download in “Standard Spreadsheet: mabacr.xlsx” section) and all the steps necessary to obtain results that will guide your decision-making process. It is also recommended to watch the video tutorial in the “YouTube: Como preencher a planilha padrão” (PT-Br only) for additional guidance. For more information, feel free to email us at arslabadack@gmail.com, we will be happy to help you.

2. STEPS TO USE THE APP

2.1 Download the Spreadsheet

Start by downloading the standard spreadsheet. In the menu on the left of the application, click on the link shown in **Figure 1** to automatically start the download. The file “mabacr.xlsx” (**Figure 2**) is in the .xlsx format and can be opened in any spreadsheet editing software (for example, Excel or Google Sheets).

Standard spreadsheet: [mabacr.xlsx](#)

Figure 1: Link to download the standard spreadsheet

	A	B	C	D	E	F	G	H	I	J
1	criteria	weight	type	A1	A2	A3	A4	A5	A6	A7
2	C1	0,15	-1,00	22600,00	19500,00	21700,00	20600,00	22500,00	23250,00	20300,00
3	C2	0,14	1,00	3800,00	4200,00	4000,00	3800,00	3800,00	4210,00	3850,00
4	C3	0,12	1,00	2,00	3,00	1,00	2,00	4,00	3,00	2,00
5	C4	0,12	1,00	5,00	2,00	3,00	5,00	3,00	5,00	5,00
6	C5	0,12	-1,00	1,06	0,95	1,25	1,05	1,35	1,45	0,90
7	C6	0,10	-1,00	3,00	3,00	3,20	3,25	3,20	3,60	3,25
8	C7	0,09	1,00	3,50	3,40	3,30	3,20	3,70	3,50	3,00
9	C8	0,07	1,00	2,80	2,20	2,50	2,00	2,10	2,80	2,60
10	C9	0,05	1,00	24,50	24,00	24,50	22,50	23,00	23,50	21,50
11	C10	0,05	1,00	6,50	7,00	7,30	11,00	6,30	7,00	6,00

Figure 2: Standard spreadsheet

2.2 Open and Edit the Spreadsheet

Once downloaded, double-click the file to open it (for desktop editing) or upload it to an online spreadsheet editor. The downloaded spreadsheet comes pre-filled with example data (**Figure 2**) that can be modified according to your analyses.

- **First column:** Contains the criteria used in the evaluation. The labels C1, C2, ..., must be renamed according to the criteria selected in your analysis (e.g. price, capacity, autonomy);
- **Second column:** Contains the weights, which demonstrate how important that criteria will be in the final decision. **Close to 1 most important, Close to zero, least important.** The sum of the weights **must be equal to one**;
- **Third column:** Contains the types. Value 1 must be used for maximization criteria (those that the bigger the better) and -1 for the minimization criteria (those that the smaller the better);

- **Fourth column onwards:** Contains the evaluated items and their values (e.g., vehicles, computers). Change the item labels (A1, A2, ..., An) to the names of the items you want to rate. Values can be on any numeric scale, but **must always be numeric**.

Notes:

- **Do not change the structure of the spreadsheet** to avoid calculation errors;
- Avoid special characters such as /, \, (, and) to prevent errors in the graphs. For example, replace Km/l with Km_l;
- It is necessary to have at least two items and two criteria to carry out the evaluation. You can add as many items and criteria as you want. The criteria, weight and type columns can be changed according to your analysis data but **cannot be removed**.

2.3 Save and Upload the Spreadsheet

Save the edited spreadsheet to your local machine. After doing this, in the mabacR app, locate the Browse button and click on it to select your spreadsheet.

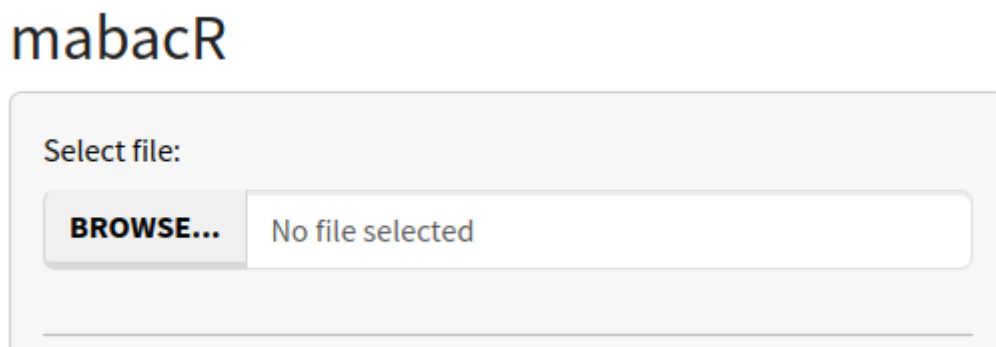


Figure 3: Browse button

3. VIEW DATA AND ANALYZE RESULTS

After loading the spreadsheet, your analysis data will be displayed in the Data tab for your conference (**Figure 4**).

DataResults

Your data

Show10▼entries

Search:

	criteria	weight	type	A1	A2	A3	A4	A5	A6	A7
1	C1	0.146	-1	22600	19500	21700	20600	22500	23250	20300
2	C2	0.144	1	3800	4200	4000	3800	3800	4210	3850
3	C3	0.119	1	2	3	1	2	4	3	2
4	C4	0.121	1	5	2	3	5	3	5	5
5	C5	0.115	-1	1.06	0.95	1.25	1.05	1.35	1.45	0.9
6	C6	0.101	-1	3	3	3.2	3.25	3.2	3.6	3.25
7	C7	0.088	1	3.5	3.4	3.3	3.2	3.7	3.5	3
8	C8	0.068	1	2.8	2.2	2.5	2	2.1	2.8	2.6
9	C9	0.05	1	24.5	24	24.5	22.5	23	23.5	21.5
10	C10	0.048	1	6.5	7	7.3	11	6.3	7	6

Showing 1 to 10 of 10 entries

PREVIOUS

1

NEXT

Figure 4: Data tab

Your results will be automatically calculated and displayed in the Results tab. The optimal results, ordered from best classified to worst classified, will be in the Ordering section. The first result in this section is the one that, according to its criteria, weights and types of evaluation, was positioned as the best choice (Figure 5).

Ordering

Ranking	
A2	0.21833375
A1	0.08259070
A6	0.04653858
A7	0.04641242
A4	0.02461733
A3	-0.04881552
A5	-0.07042947

Figure 5: Optimal choices, according to your analysis

You can also check the border approximation area values generated for each criterion (Figure 6).

Border Approximation Area Values (BAA)

	baa
1	0.20855467
2	0.18853777
3	0.17198152
4	0.19520876
5	0.17401557
6	0.16245608
7	0.13186541
8	0.10104409
9	0.07893715
10	0.05898421

Figure 6: BAA for each criteria

And finally, graphs that analyze the behavior of each item in relation to the value of BAA, for each criterion, are generated. You can change the chosen criteria in the `Select a criteria` checkbox.

Classification of Items Analyzed in Relation to the Border Approximation Area (BAA)

Select a criteria:

C1

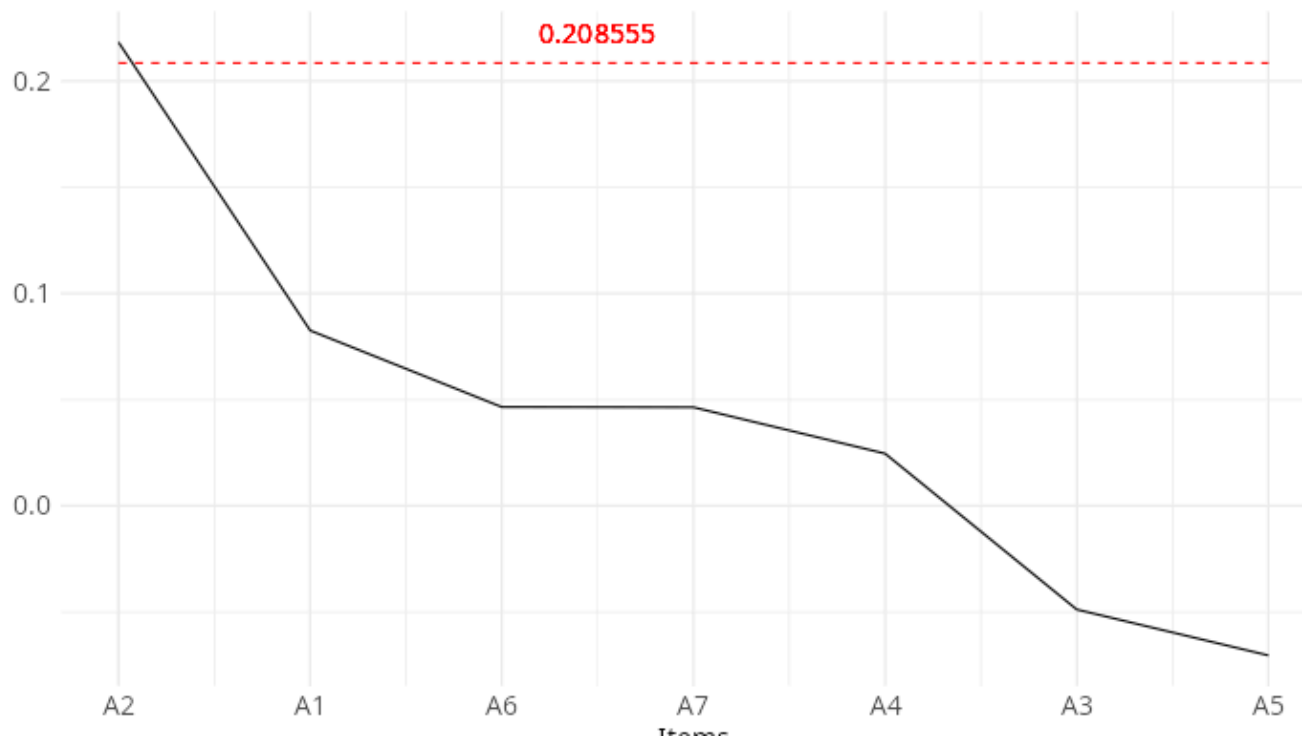


Figure 7: Graphs

4. CONCLUSION

Thank you for choosing the MABAC application for your decision-making needs! Feel free to explore and use the app. If you'd like to learn more, the source code is available under “**Repository**” in the app. Please cite our work in your results:

How to cite:

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