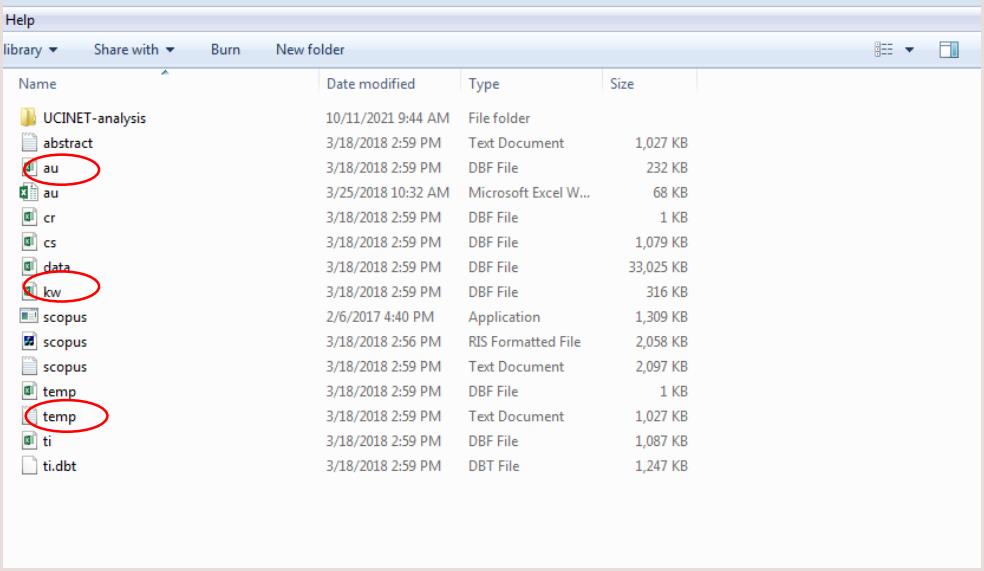
How to work with BajiMacro

1- First, download the records related to your project from Web of Science, Scopus, or Google scholar databases in the same way as it is downloaded for use in isi.exe, scopus.exe, bibauthor.exe, co-author.exe, or gscholar.exe.

Please before downloading your records, make sure that the number of your data is not too large to do the pre-processing step, and try to set a threshold while you are searching the records related to your project. For instance, if you are intending to do co-authorship network analysis and after your search in the database you realize that the amount of data is too large, then set a threshold like: only top authors who have more than 10 articles or authors with H-index higher than 4 etc. This is an instance. You should put the threshold according to your research method and the scientific area that you are doing your scientometric project on it.

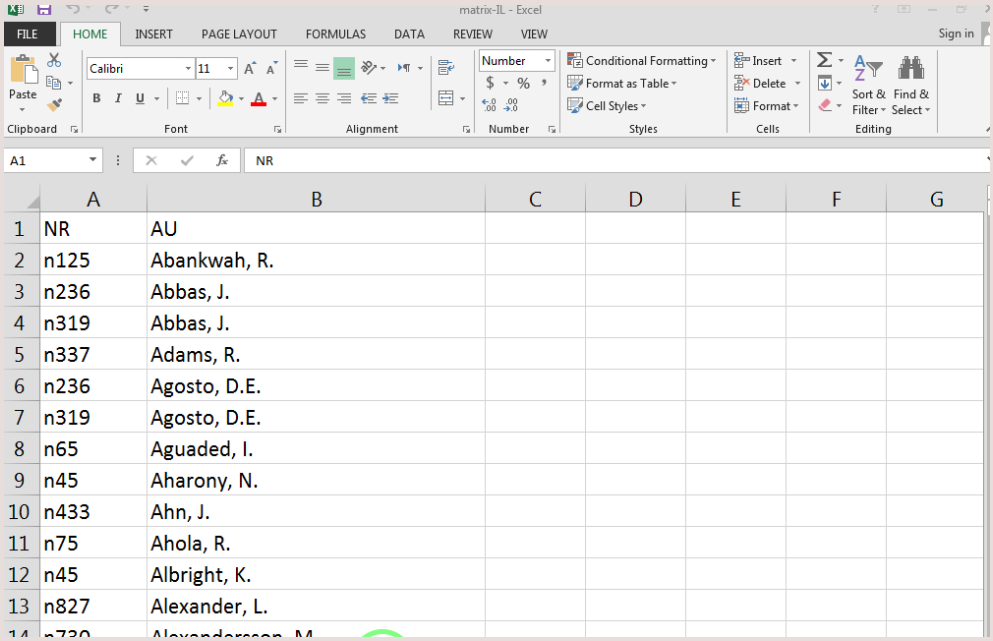
2- Process your downloaded records using one of the above mentioned software.



Among the extracted files, you can choose the following files for generating co-occurrence matrix in BajiMacro:

- Au. DBF for creating co-author matrix
- af.DBF for creating international collaboration matrix
- Kw.DBF, ti.DBF, de.DBF, and Wc.DBF for creating co-word matrix

3- After choosing your desired file, open it in Microsoft Excel. Please do not forget that never do any changes to your "NR" column, just only when you want to delete some data, delete the whole cell. "NR" column is important because it contains the article's code and the macros generates the matrix based on it.

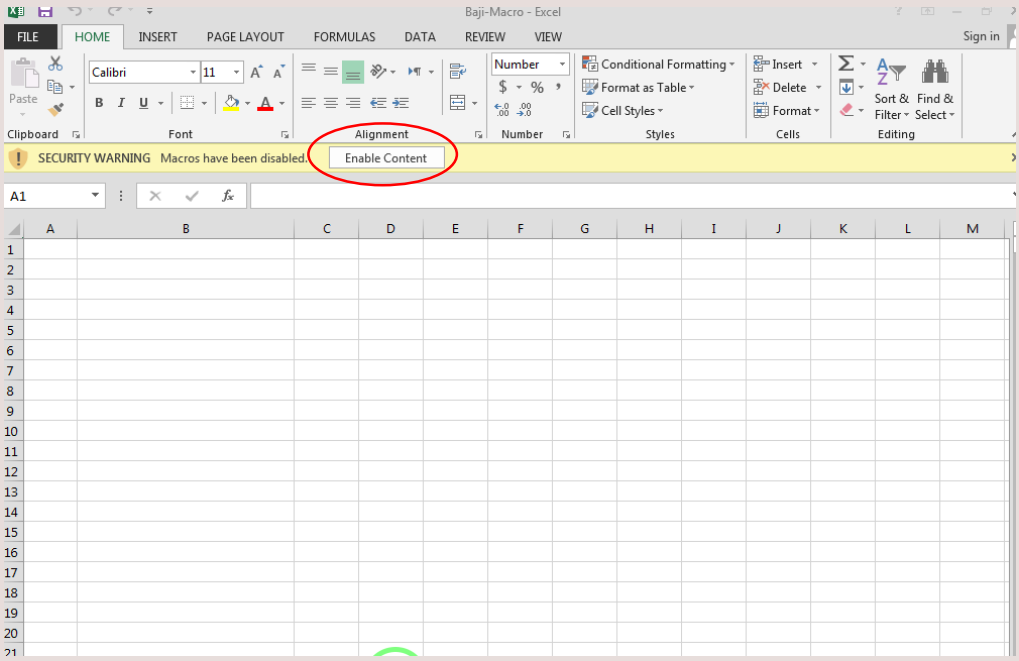


	A	B	C	D	E	F	G
1	NR	AU					
2	n125	Abankwah, R.					
3	n236	Abbas, J.					
4	n319	Abbas, J.					
5	n337	Adams, R.					
6	n236	Agosto, D.E.					
7	n319	Agosto, D.E.					
8	n65	Aguaded, I.					
9	n45	Aharony, N.					
10	n433	Ahn, J.					
11	n75	Ahola, R.					
12	n45	Albright, K.					
13	n827	Alexander, L.					

4- Then open **BajiMacro**. Please do not forget to click on the "Enable content" button in order to activate the Macros. Next using "select all" and "copy", paste your data from your opened data file into BajiMacro.

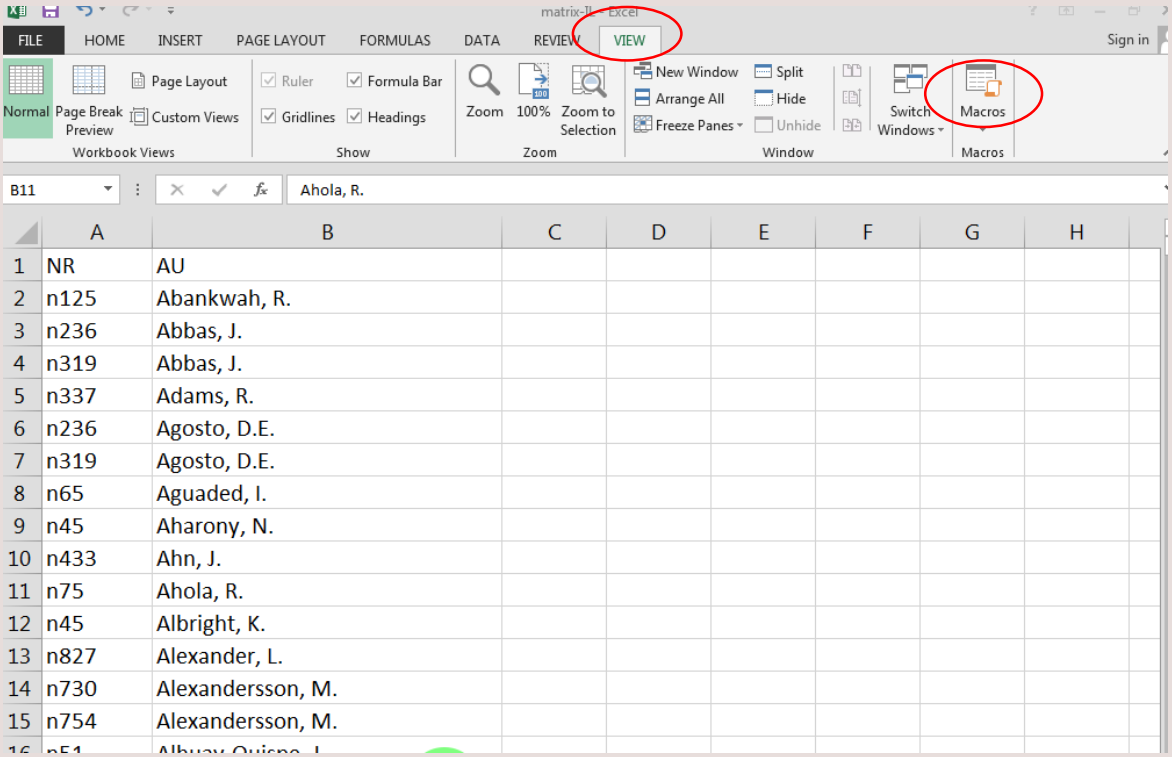
BajiMacro consists of three macros: first one prepares co-occurrence list of the records, second one generates the primary co-occurrence matrix, and the

third one process the final co-occurrence matrix. The resulting matrix can be analyzed and visualized using software such as Ucinet, Vosviewer, Pajek, etc.



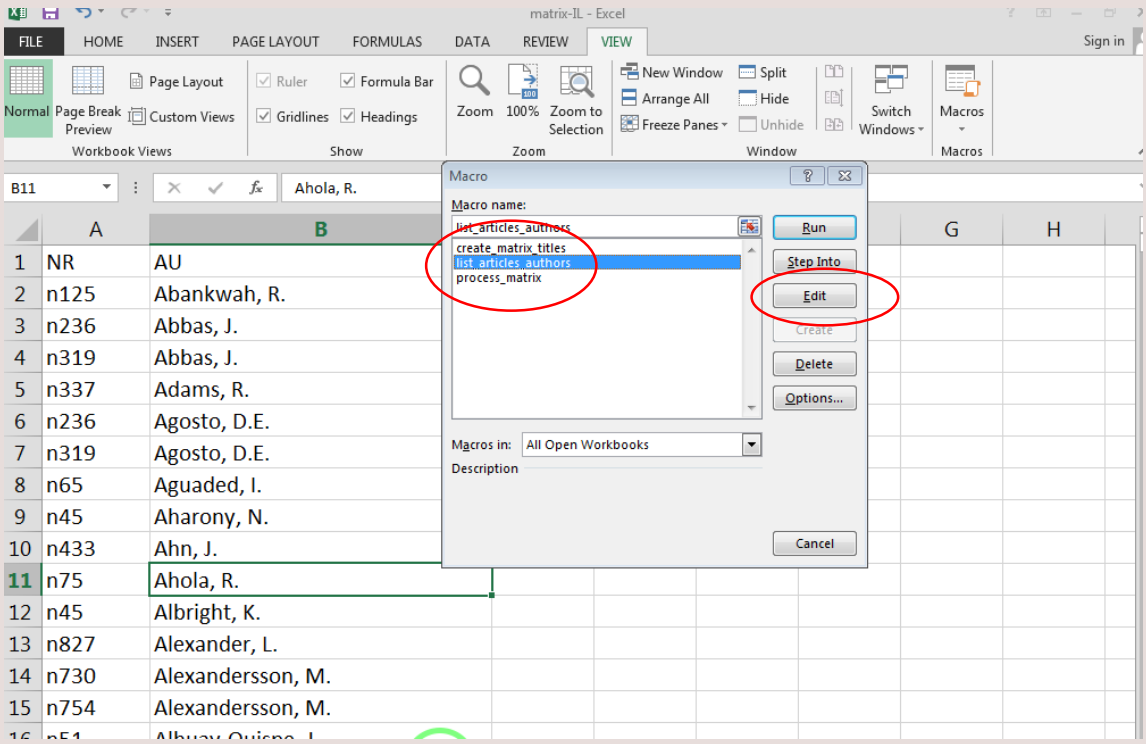
5- Then do your pre-processing step in the file using Microsoft Excel tools. Pre-processing includes removing duplicates, counting frequencies, standardizing word spelling, and integrating keywords or words into more general topics for co-word analysis. In scientometric research sometimes it is most important for the researcher to perform the pre-processing step manually because he/she will be able to identify records or data that are not suitable for analysis.

6- Now it is time to generate your co-occurrence matrix. From the main toolbar of Microsoft Excel, click on “view” button and select “Macros” button.



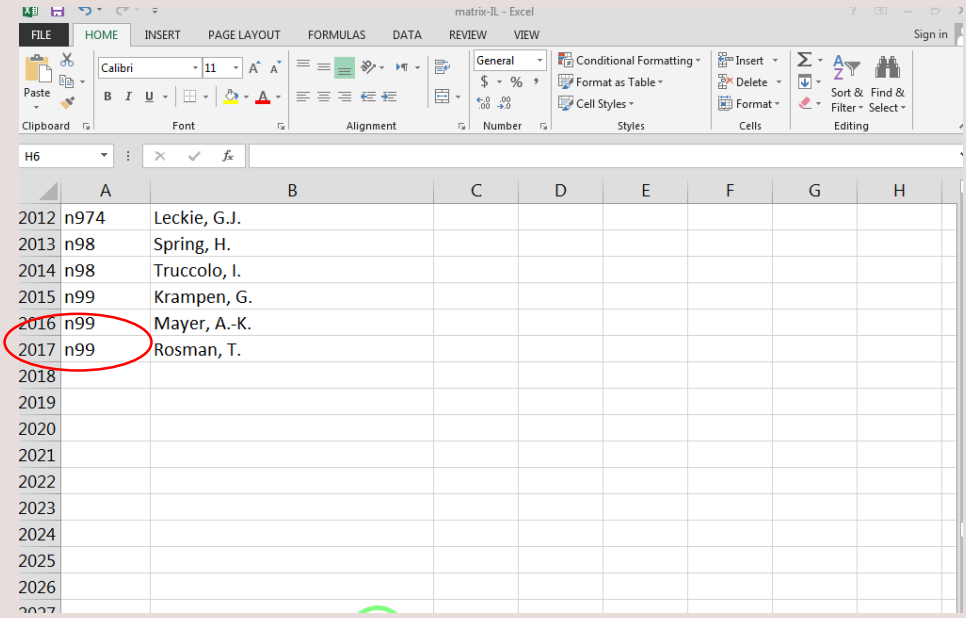
	A	B
1	NR	AU
2	n125	Abankwah, R.
3	n236	Abbas, J.
4	n319	Abbas, J.
5	n337	Adams, R.
6	n236	Agosto, D.E.
7	n319	Agosto, D.E.
8	n65	Aguaded, I.
9	n45	Aharony, N.
10	n433	Ahn, J.
11	n75	Ahola, R.
12	n45	Albright, K.
13	n827	Alexander, L.
14	n730	Alexandersson, M.
15	n754	Alexandersson, M.

After viewing your 3 Macros, select one of them and click on the "Edit" button.



	A	B
1	NR	AU
2	n125	Abankwah, R.
3	n236	Abbas, J.
4	n319	Abbas, J.
5	n337	Adams, R.
6	n236	Agosto, D.E.
7	n319	Agosto, D.E.
8	n65	Aguaded, I.
9	n45	Aharony, N.
10	n433	Ahn, J.
11	n75	Ahola, R.
12	n45	Albright, K.
13	n827	Alexander, L.
14	n730	Alexandersson, M.
15	n754	Alexandersson, M.

7- It is time to make the macros ready to run. To do this, you need to know the number of the cells, the number of authors, words or articles in your Microsoft Excel file. You can go to the bottom of your Microsoft Excel file and see the number of the cells, or sort your "NR" column using "A-Z" button in the main menu and see the number of your articles.

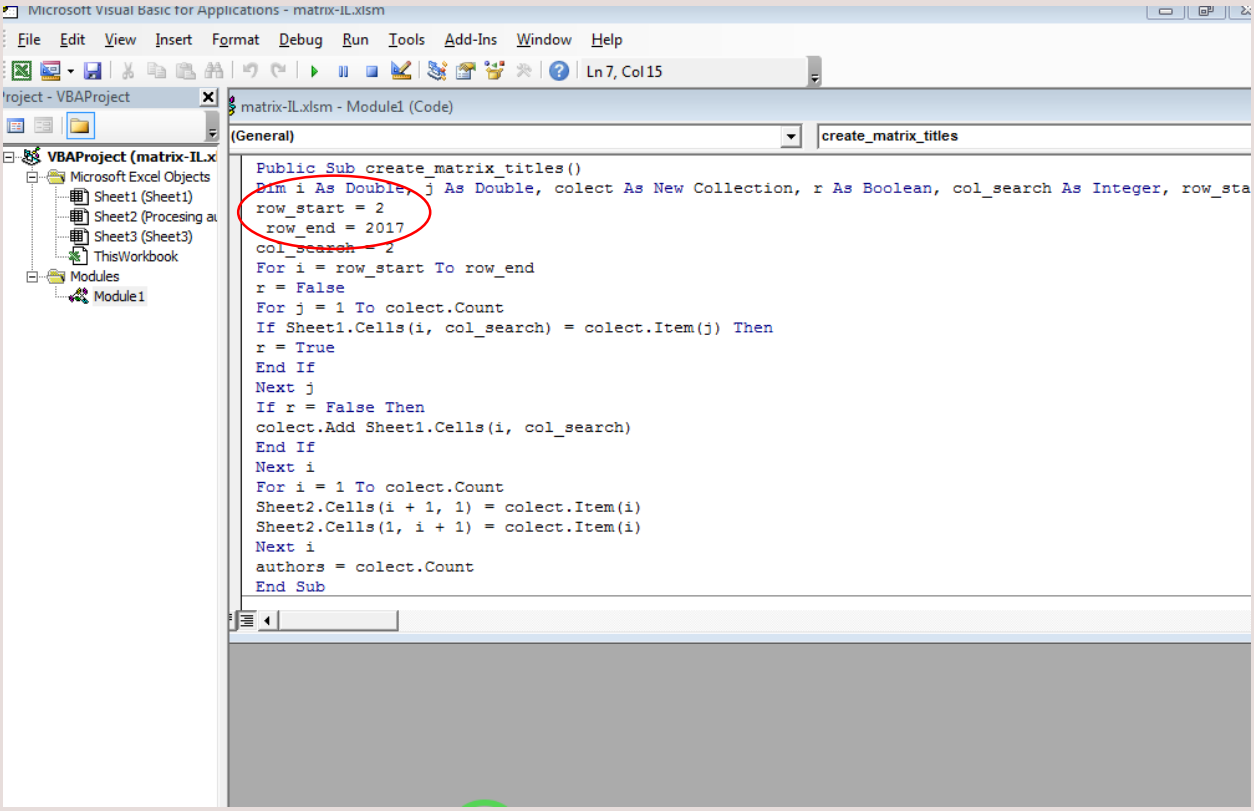


After knowing the number of cells and the number of the authors, articles or words, go to the macros, click on the "Edit" button and prepare the macros as follow:

Write the number of your cells, in the third row of the macros. "row-start" must be 2, and the "row-end" must be the number of your cells. For instance "2016".

Then in the "public sub list_articles_authors" and the "public sub create-Matrix" rows, write the number of the authors, articles, or the words. For instance "99" or "755".

Please note that this macros generates co-occurrence matrices including co-author and co-word, so by seeing the "public sub list_articles_authors" do not be confused, it is just the title and the macro generates matrices based on your data.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Sheet3 (Sheet3)
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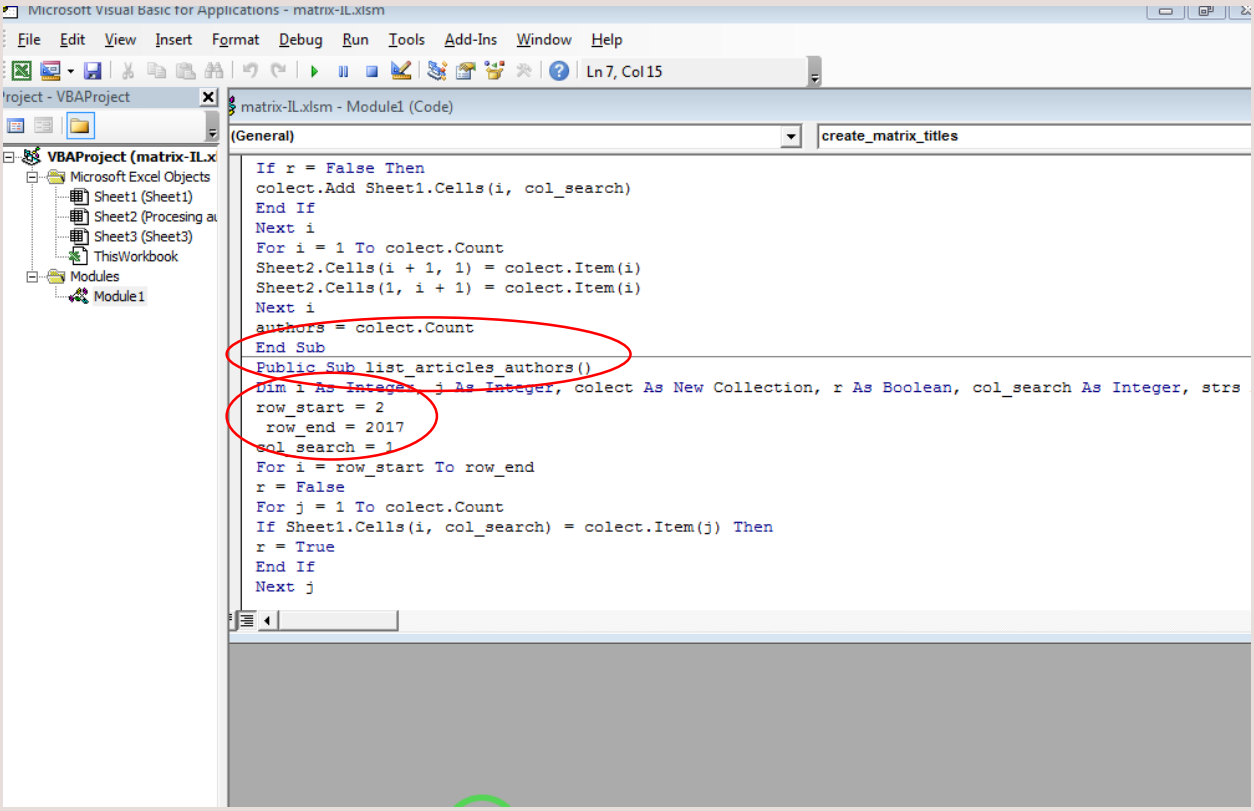
Modules
Module1
matrix-IL.xlsm - Module1 (Code)
(General)
create_matrix_titles
Public Sub create_matrix_titles()
Dim i As Double, j As Double, colect As New Collection, r As Boolean, col_search As Integer, row_sta
row_start = 2
row_end = 2017
col_search = 2
For i = row_start To row_end
r = False
For j = 1 To colect.Count
If Sheet1.Cells(i, col_search) = colect.Item(j) Then
r = True
End If
Next j
If r = False Then
colect.Add Sheet1.Cells(i, col_search)
End If
Next i
For i = 1 To colect.Count
Sheet2.Cells(i + 1, 1) = colect.Item(i)
Sheet2.Cells(1, i + 1) = colect.Item(i)
Next i
authors = colect.Count
End Sub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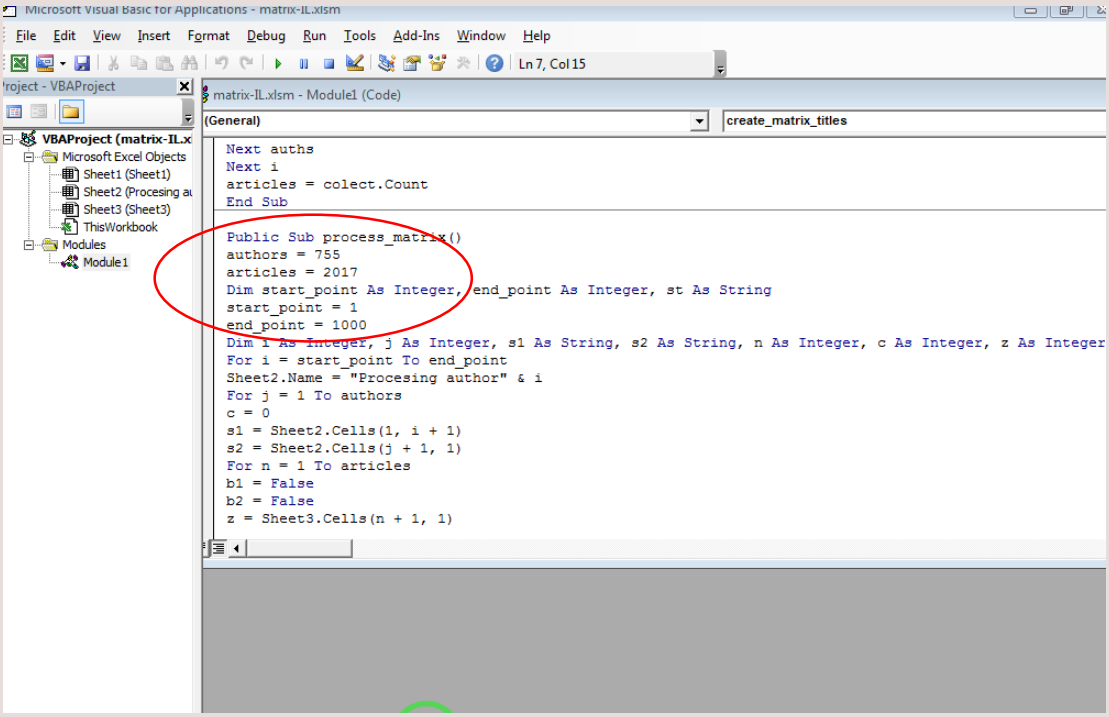
Sheet3 (Sheet3)
ThisWorkbook
Modules
Module1
matrix-IL.xlsm - Module1 (Code)
(General)
create_matrix_titles
If r = False Then
colect.Add Sheet1.Cells(i, col_search)
End If
Next i
For i = 1 To colect.Count
Sheet2.Cells(i + 1, 1) = colect.Item(i)
Sheet2.Cells(1, i + 1) = colect.Item(i)
Next i
authors = colect.Count
End Sub
Public Sub list_articles_authors()
Dim i As Integer, j As Integer, colect As New Collection, r As Boolean, col_search As Integer, strs
row_start = 2
row_end = 2017
col_search = 1
For i = row_start To row_end
r = False
For j = 1 To colect.Count
If Sheet1.Cells(i, col_search) = colect.Item(j) Then
r = True
End If
Next j


Microsoft Visual Basic for Applications - matrix-IL.xlsm
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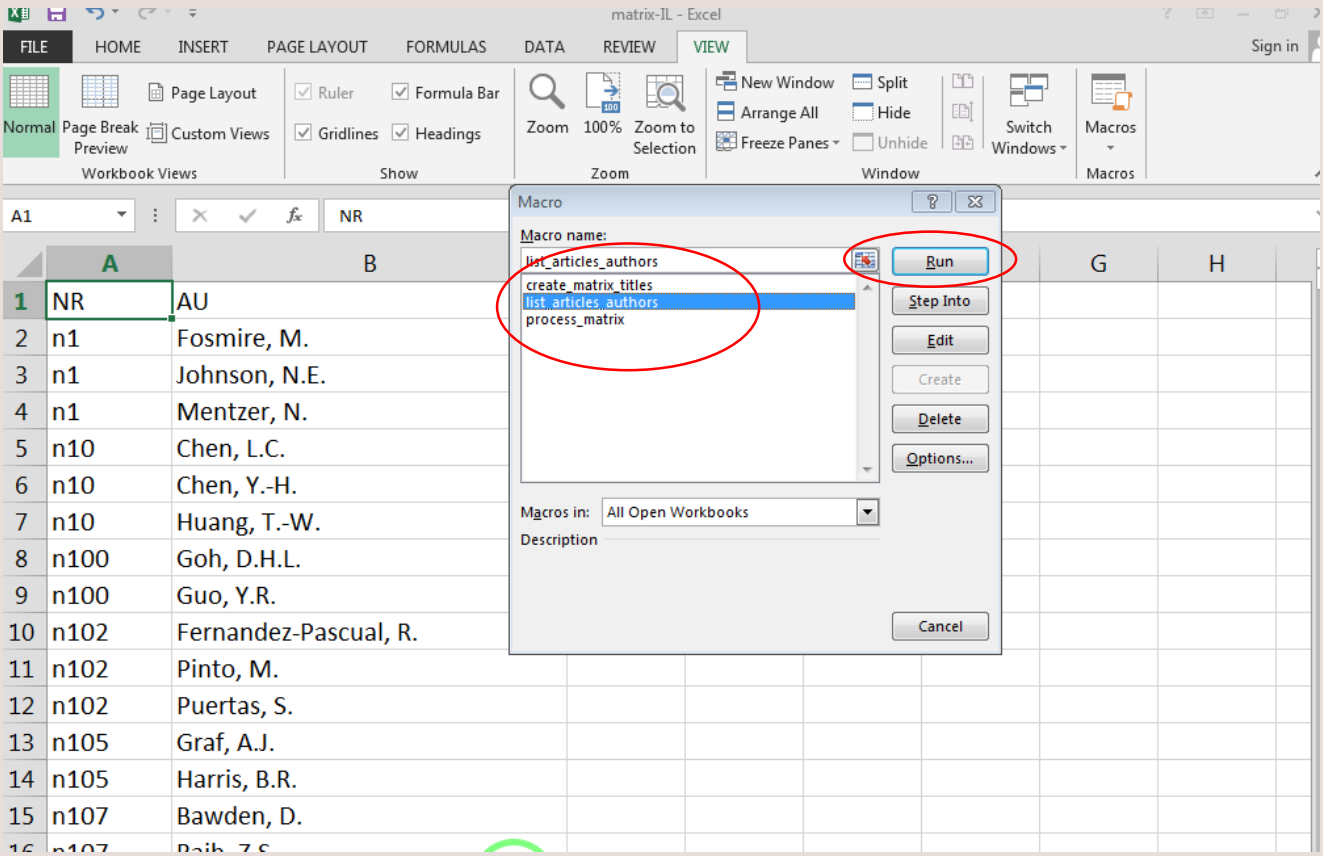
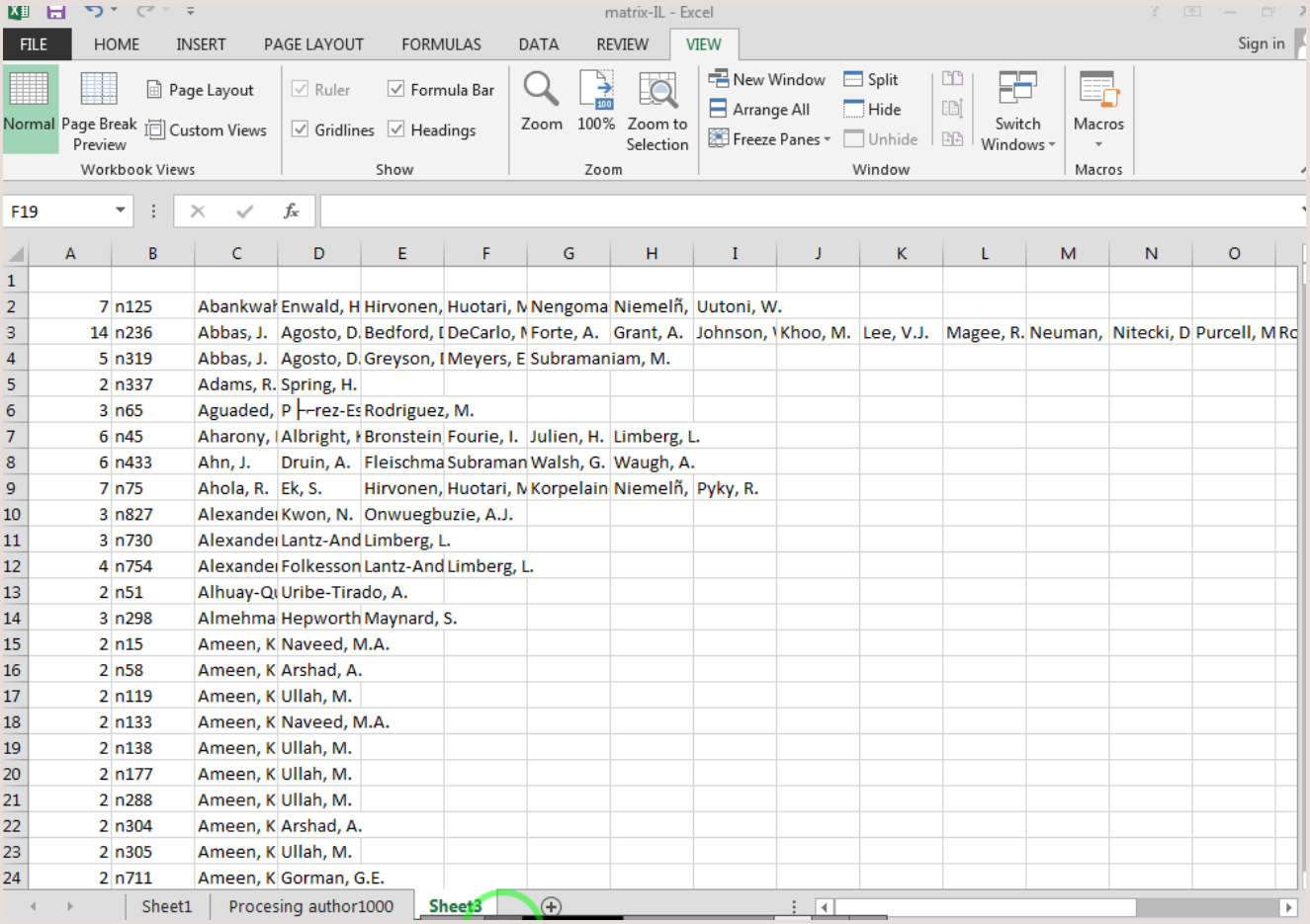
Sheet1 (Sheet1)
Sheet2 (Procesing au
Sheet3 (Sheet3)
ThisWorkbook
Modules
Module1
matrix-IL.xlsm - Module1 (Code)
(General)
create_matrix_titles
Next auths
Next i
articles = colect.Count
End Sub
Public Sub process_matrix()
authors = 755
articles = 2017
Dim start_point As Integer, end_point As Integer, st As String
start_point = 1
end_point = 1000
Dim i As Integer, j As Integer, s1 As String, s2 As String, n As Integer, c As Integer, z As Integer
For i = start_point To end_point
Sheet2.Name = "Procesing author" & i
For j = 1 To authors
c = 0
s1 = Sheet2.Cells(1, i + 1)
s2 = Sheet2.Cells(j + 1, 1)
For n = 1 To articles
b1 = False
b2 = False
z = Sheet3.Cells(n + 1, 1)

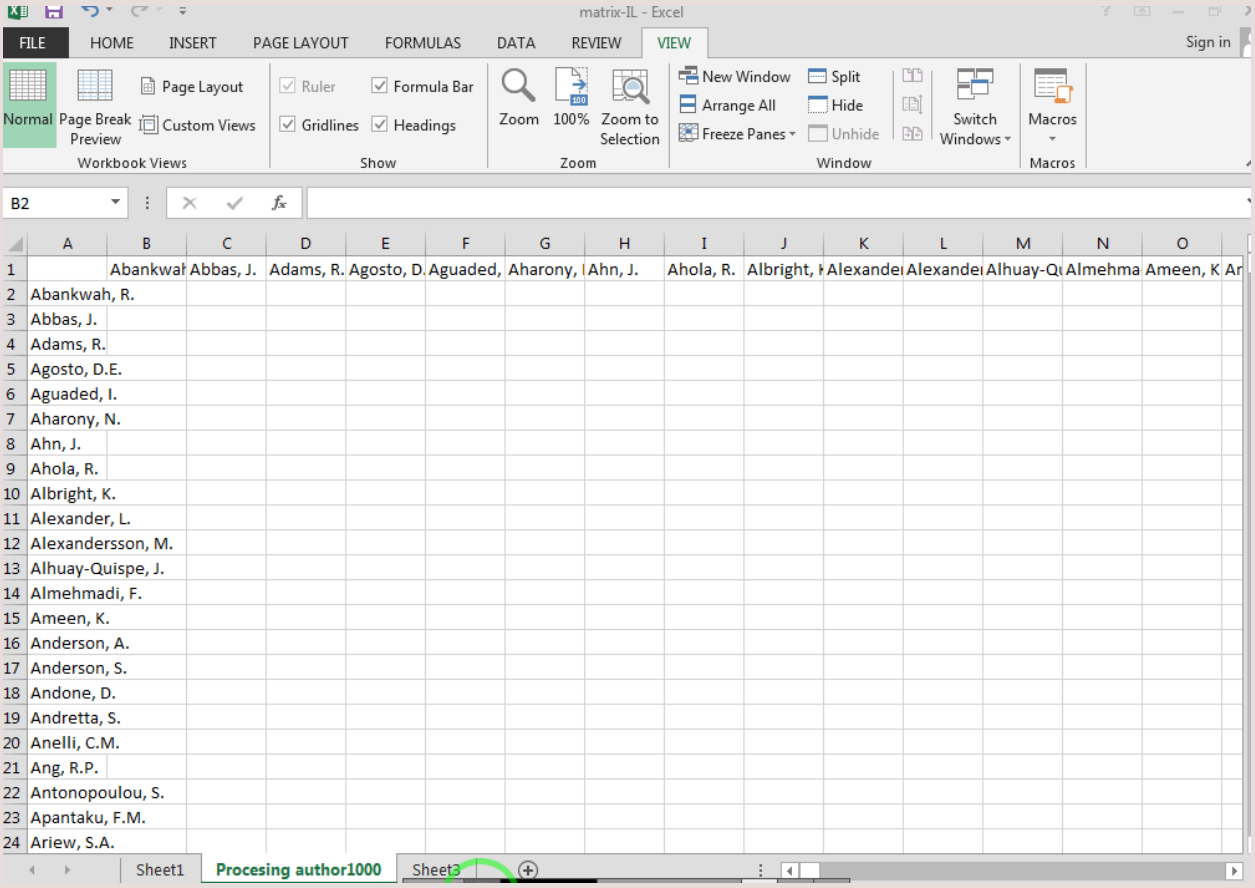
8- After making the changes, close the macros window and from your Microsoft Excel, open the "Macros" again. Form the macros list firstly run the "list_articles_authors" macro.



This will create a list of co-occurrences in a separate sheet.

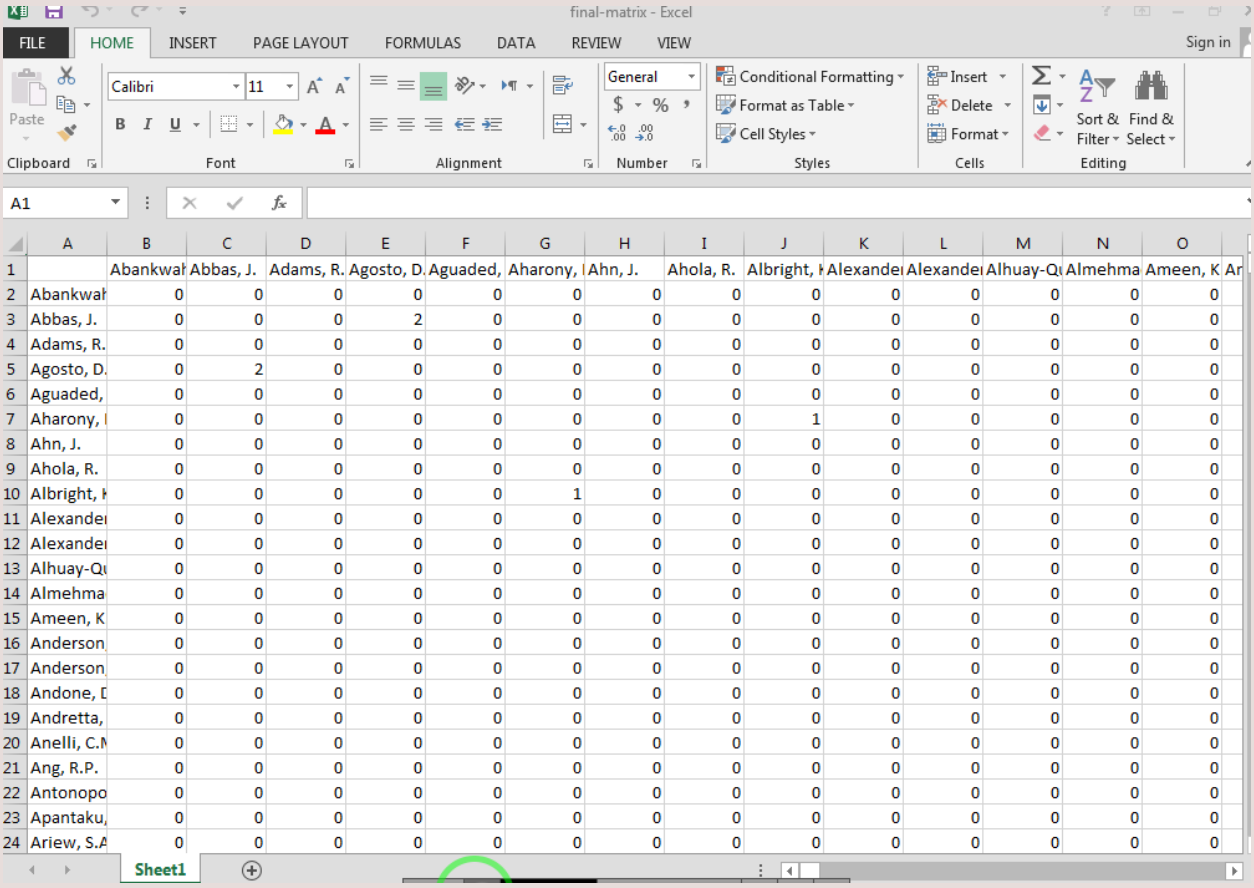


Then go to the macros list again and run the "create_matrix_titles" macro. This will generate an empty matrix in a separate sheet.



After doing this step, again go to the macros list and run the process matrix macro. Please note that generating the matrix will take time based on the number of the cells and articles from minimum 1 hour to several hours. Therefore, be patient and do not close the program.

9- When your co-occurrence symmetric matrix being generated, then you can copy it in a separate Microsoft Excel file without the macros. Now your matrix is ready to be analyzed in software such as UCINET, Pajek, Vosviewr, etc.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1		Abankwah	Abbas, J.	Adams, R.	Agosto, D.	Aguaded,	Aharony,	Ahn, J.	Ahola, R.	Albright, K	Alexander	Alexander	Alhuay-Q	Almehma	Ameen, K
2	Abankwah	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Abbas, J.	0	0	0	2	0	0	0	0	0	0	0	0	0	0
4	Adams, R.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Agosto, D.	0	2	0	0	0	0	0	0	0	0	0	0	0	0
6	Aguaded,	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Aharony,	0	0	0	0	0	0	0	0	1	0	0	0	0	0
8	Ahn, J.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	Ahola, R.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Albright, K	0	0	0	0	0	1	0	0	0	0	0	0	0	0
11	Alexander	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Alexander	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Alhuay-Q	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	Almehma	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	Ameen, K	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Anderson	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	Anderson	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Andone, D	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	Andretta,	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Anelli, C.M	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Ang, R.P.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	Antonopo	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	Apantaku,	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Ariew, S.A	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Good luck

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