

# Election of Electoral Bodies' Members among Candidate University Professors, In Greece and Drawings by Lot among Candidate Students

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**Abstract:** In Greece, the Law 4957/2022 plans the procedures about the election of the Professors of Universities. The best of them are elected via Electoral Bodies, from lists of “Internal members” and “External members” as well as with their cognitive subject (“Same” or “Related”). In Universities, there also exists the need of choosing some number of students from a large pool of candidates for projects, activities etc. The present study suggests a Microsoft Excel program for the election of Electoral Bodies' members of Universities for the development of an old professor position or the creation of a new one, according Greek Laws. A second program in Microsoft Excel should optimize the processes for the random selection of students (according parameters as their gender). The code of the two programs is presented in this study. Many advantages are emerged as the saving of time and the computerization process which cannot be offended.

**Keywords:** University, Electors, Electoral Body, Drawing by lot, Students, Microsoft Excel Programs

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## 1. Introduction

Internet voting and voting through machines for national elections globally occupy percentages (7%) and (14%), respectively [1]. These findings imply a lack of trust for technical means yet, for very important elections as country votes. The processes and the results must guarantee free, fair and secret elections to legitimize the outcome [2]. Drawing by lots has been used for thousands of years to assist deal with uncertainty and ensure fairness [3]. Even ancient Greece used drawing by lot for oracles and divination. Social activities as sacrifices and feasts used these techniques [4]. In recent societies, drawing by lot is used even for sensitive situations as the case of random selection of AIDS patients for treatment [5]. Religions or even political parties use also this type of selection for their leaders [6].

The elections for the occupation of the Professors at the Universities are a very important process. Electoral integrity and legitimacy are necessary for every electoral process. These are involving technical means for the electoral management. A rate of (60%) of countries used these means for tabulation of votes, in national elections [7]. Universities and businesses already use Microsoft Excel programs (called Ms Excel), as the needs and the advantages are a lot [8], [9]. Contemporary issues as sustainability use these program applications for teaching [10]. Students success is evaluated and certification has a great importance [11] and applications are introduced to students' lessons [12], while bibliography is lack from Ms Excel applications about the election of the University Professors.

In Greece, the Law 4009/2011 [13] for Universities predicted the processes for the election of the members of the Electoral Bodies (E.B.) for the development of an old post or the creation of a new Professor position. After the publication of the announcement of the position of Professor at any level, applications are submitted by the candidates and the election procedures begin, according to the criteria as well as their qualifications.

Paragraph 2 of Article 4 of the Law 4405/2016 introduces an amount of 11 members of the E.B. for University Departments consisted of up to forty (40) members and the amount of 15 members for Departments for those having over the forty (40) members of Teaching Research Staff (called as “D.E.P”) [14]. It also defines that five (5) members of both the registries “Internal member” and “Same cognitive subject” are mandatory for the 1st occasion while seven (7) members are mandatory for the 2nd occasion.

Recently, the Universities have adopted the Law 4957/2022 which presents the procedures for the election [15]. Article 144 determines the register for the cognitive subjects per scientific field and separates them into the “Same” and “Related” cognitive subjects. The management of these matters belongs to the Assembly of the Department and the Dean's Office of the University, after the approval of the Senate.

Article 145 determines that the Electors are selected from the “Internal member” and “External member” registries of the Department. “Internal member” electors are considered members of “D.E.P.” of the Department while “External member” electors are considered members of “D.E.P.” of other Departments of the same or another University of the country and foreign institutions. These members could also be corresponding level researchers of the research centers and technological institutes or other research organizations of the country and abroad. However, all the Electors (“Internal member” or “External member”) are categorized as having “Same” or “Related” cognitive subject. Their registers are updated every year.

Article 146 determines the number of the E.B. as eleven (11) Regular electors and (11) eleven Deputy electors. The Electors belong to the same or higher Professors' ranking of the announced position. Paragraph 3 of the same article defines that the election of the Electors (Regular and Deputy) must be carried out through an electronic drawing by lot, which is carried out in an automated way through an electronic integrated management system, the development and operation of which is carried out through the National Network of Technology and Research Infrastructures (called "EDYTE S.A.") of the Ministry of Digital Governance. Until nowadays, the system has not been operated and the random selection of the members of Electors is carried out either through draft MsExcel programs (using random procedures) either through the old method of paper process where the acceptance of random choosing of (11) eleven Regular and (11) eleven Deputy electors, depends on pieces of paper where the name and surname of each candidate is written. The problem is that this procedure must consider the "Internal member" and "External member" catalogs as well as those of the "Same" and "Related" cognitive subject. Mistakes or misuses may alter the final result, which may alter the synthesis of the E.B. and finally to favor or disadvantage any candidate of the announced Professor position. The consumption of extra time for the process is a certain need.

These problems are solved using the first proposed MsExcel program that is suggested. The certification of that universal program's use guarantees the transparency, guarantee and reliability of the process. The probability of selection among the candidates is not the same, because it depends on the registry that they belong ("Internal member" or "External member" and "Same" or "Related" cognitive subject). Rules are implemented as the finding of "Internal members" precede those of "External members". But, the members that participate to each subcategory have the same possibility of selection.

Activities inside academic campus (or out of it) may need the selection of a certain number of students, ignoring their qualification and their lessons ranking. These may be the non-compulsory practical training, the awarding of a gift with the same participation for all the candidates (or according some participation criteria), potential holidays for some categories of students, etc. The probability of selection among the candidates is exactly the same.

The second proposed MsExcel program solves the above problem without using draft methods for the selection. The program has the ability to select according the gender of the candidate students. For example, a gift for female audience must isolate the male audience, or vice versa. Even more, instead of male-female could be used another binary selection of the program user's choice.

## 2. Methodology-Problem Formulation

### 2.1 The Microsoft Excel program for the election of the Electoral Body

The main data for this program and the election are processed in five (5) Units (colored in the MsExcel program as numbers included in purple square). The code is reached through the Internet MsExcel.

In Unit 1, the choice of the number of the members (11 or 15) of the E.B. is introduced (Fig. 1). The numbers of the below Figures in Appendix represent an example. The most common number is the eleven (11) member for Regular and eleven (11) member for Deputy members. The program can introduce up to forty (40) candidates, in cells B14-C53 (as surname and name). The total number of Regular and Deputy Electors is given in cell F8, from the code (1) and it is announced in cell G8:

$$=IF(C8="11 members",22,30) \quad (1)$$

First of all, every data introduced by previous users of the program must be erased. New data of the candidates as "Surname", "Name", "Professor rank", "University Foundation", "Type of Elector" and "Type of cognitive subject" must be filled in cells of column B-G respectively (Fig. 2).

Unit 2 summarizes the number of candidates in each category (Internal member-External member, Same-Related cognitive subject) (Fig. 3). The codes are:

#### (a) For candidate Electors

- For "Internal member" and "Same cognitive subject", in cell L5, formula (2):  
=COUNTIF(T14:T53, "Internal memberSame cognitive subject") (2)
- For "Internal member" and "Related cognitive subject", in cell L6, formula (3):  
=COUNTIF(T14:T53, "Internal memberRelated cognitive subject") (3)
- For "External member" and "Same cognitive subject", in cell L7, formula (4):  
=COUNTIF(T14:T53, "External memberSame cognitive subject") (4)
- For "External member" and "Related cognitive subject", in cell L8, formula (5):  
=COUNTIF(T14:T53, "External memberRelated cognitive subject") (5)

#### (b) For elected candidates

- For "Internal member" and "Same cognitive subject", in cell Q5, formula (6):

=IF(\$C\$8="11 members", COUNTIF(W14:W35, "Internal memberSame cognitive subject"),  
COUNTIF(AA14:AA43, "Internal memberSame cognitive subject")) (6)

- For "Internal member" and "Related cognitive subject", in cell Q6, formula (7):  
=IF(\$C\$8="11 members", COUNTIF(W14:W35, "Internal memberRelated cognitive subject"),  
COUNTIF(AA14:AA43, "Internal memberRelated cognitive subject")) (7)

- For "External member" and "Same cognitive subject", in cell Q7, formula (8):  
=IF(\$C\$8="11 members", COUNTIF(W14:W35, "External memberSame cognitive subject"),  
COUNTIF(AA14:AA43, "External memberSame cognitive subject")) (8)

- For "External member" and "Related cognitive subject", in cell Q8, formula (9):  
=IF(\$C\$8="11 members", COUNTIF(W14:W35, "External memberRelated cognitive subject"),  
COUNTIF(AA14:AA43, "External memberRelated cognitive subject")) (9)

The randomized drawing by lot for 11members either 15members E.B. is performed using the code 10, either in cells K14-K36 or in cells P14-P43, respectively (Fig. 4):

=UNIQUE(RANDARRAY(1000,1,1,\$F\$8,TRUE)) (10)

The user must press the button F9 many times (10 times proposed) in order to randomize the drawing by lot. Every change to the program will change the randomized order. For this reason, the user must COPY, and SPECIAL PASTE as VALUE all the randomized numbers from orange cells K14-K36 or P14-P43 to the yellow cells L14-L36 or Q14-Q43, in order to stabilize them. This procedure should be done, according the 11 or the 15 regular members of the E.B. that are investigated.

Cells W5-X8 are encoding, as follows, the origination of the electors and their cognitive subject. The merged type of the A/A of candidates is:

- 1 for "InternalSamecognitive subject",
- 2 for "InternalRelated subject",
- 3 for "ExternalSamecognitive subject" and
- 4 for "ExternalRelatedcognitive subject" (Fig. 5).

Merge categories are automatically revealed for all the candidates (Fig. 6), while the Ms Excel program uses the code (11), in cells U14-U53:

=VLOOKUP(T14, \$W\$5:\$X\$8, 2, FALSE) (11)

Next, specifying for 11 members E.B., the program announce results using the code (12):

=VLOOKUP(V14, \$\$S14:\$U\$43, 3, FALSE) (12)

while for 15 members E.B. uses the following code (13):

=VLOOKUP(Z14, \$\$S14:\$U\$43, 3, FALSE) (13)

Unit 3 presents the ranking of the randomized categories i.e. the classification of a/a, of the candidates for each type 1-4 (Fig. 7). This ranking is created for the accepted synthesis of the E.B.

The codes (14)-(17) for the 11members E.B. are the following:

- For merged type 1:  
=FILTER(V14:X35, X14:X35=1, "") (14)

- For merged type 2:  
= FILTER(V14:X35, X14:X35=2, "") (15)

- For merged type 1:  
= FILTER(V14:X35, X14:X35=3, "") (16)

- For merged type 1:  
= FILTER(V14:X35, X14:X35=4, "") (17)

The results are automatically announced in the cells AF6-AH16 (for type 1), in the AJ6-AL16 (for type 2), in the AN6-AO16 and in the AR6-AT16 cells.

The codes (18)-(21) for the 15members E.B. are the following:

- For merged type 1:  
= FILTER(Z14:AB43, AB14:AB43=1, "") (18)

- For merged type 2:  
=FILTER(Z14:AB43, AB14:AB43=2, "") (19)

- For merged type 1:  
=FILTER(Z14:AB43, AB14:AB43=3, "") (20)

- For merged type 1:  
= FILTER(Z14:AB43, AB14:AB43=4, "") (21)

The results are automatically announced in the cells AF21-AH35 (for type 1), in the AJ21-AL35 (for type 2), in the AN21-AR35 and in the AR21-AT35 cells.

The summarized number for each type of classification of type 1-4 is created in cells AH17, AL17, AP17 and AT17, for the eligible candidates. These are also shown in Unit 2, especially in cells L5-L8 (for 11 members of the E.B.) or in cells Q5-Q8 (for 15 members).

In Unit 4, tile cells are filled in with the maximum number of candidates in each category 1-4 (Fig. 8). Specifically, for Regular electors, the user must fill in the yellow cells according the ranking of Table 3 of Unit 3. The Law 4957/2022 defines that the maximum number of type 1 is five (5) for 11 members E.B. It is considered that this limitation should be seven (7) for the 15 members E.B.

The user of the program performs a check if the amount of numbers of type 1 in Unit 3, shown in cell AH17 (for 11 members) or AH36 (for 15 members) is greater than five (5) for 11 members or respectively seven (7) for 15 members E.B.. Then, the five (5) or the seven (7) of A/A of candidates in the first yellow cells AY5-AY9 or AY5-AY11, in Unit 4 must be filled. The leftover of them should be filled in, in the second yellow column in cells BA5-BA9 or BA5-BA11. In this column of regular electors and Type 2, it should also be filled in all the A/A of candidates from type 2 of Table 3 of Unit 3.

For Deputy Electors, the same procedure is performed, except of the limitation of five (5) or seven (7) Electors, respectively. All the above copies must follow the rule of COPY and SPECIAL PASTE as VALUE.

Two checks are performed in Unit 4 about the limitation of five (5) Electors for 11 members E.B. (or seven (7) Electors respectively) and the amount of E.B. (11 or 15 members). The summarized cells of merged types 1-4 are shown in cells AY20, BA20, BC20 and BE20 (according types 1-4 of that Unit), while the codes (22)-(25) are as follows:

- merged type1:  
= IF(\$C\$8= "11 members", COUNT(AY5:AY15), COUNT(AY5:AY19)) (22)

- merged type2:  
= IF(\$C\$8= "11 members", COUNT(BA5:BA15), COUNT(BA5:BA19)) (23)

- merged type3:  
= IF(\$C\$8= "11 members", COUNT(BC5:BC15), COUNT(BC5:BC19)) (24)

- merged type4:  
= IF(\$C\$8= "11 members", COUNT(BE5:BE15), COUNT(BE5:BE19)) (25)

The code for the checks is:

- 1st occasion. The code (26) in cell AY23 checks the limitation of five (5) or seven (7) members of type1:  
=IF(\$C\$8="11 members", IF(AY20<=AY21,"OK","WRONG"), IF(AY20<=AY21,"OK","WRONG")) (26)

- 2st occasion. The code (27) in cell BD23 checks the limitation of 11 or 15 members of the E.B.:  
==IF(\$C\$8="11 members", IF(BC20<=BC21,"OK","WRONG"), IF(BE20<=BE21,"OK","WRONG")) (27)

In Unit 5, attempting to find the Regular members, the user must COPY and SPECIAL PASTE as VALUE the yellow cells AY5-AY9 (for 11 members) or AY5-AY11 (for 15 members) of merged type1 and cells BA5-BA15 of type 2 of Unit 3 to the column of the yellow cells BK17 (for 11 members) or BK7-BK21 (for 15 members) (Fig. 9). The same procedure (of COPY and SPECIAL PASTE as VALUE), is also implemented for the Deputy members, namely there are completed the yellow cells BK27-BK37 (for 11 members) or BK27-BK41 (for 15 members) from the merged type3 (cells BC5-BC15) and type 4 (cells BE5-BE15) of Table 4 of Unit 3.

The Final Table of Unit 5 presents the results of the MsExcel program. Automatically, the catalogue of the 11 or the 15 members of the E.B. is presented for Regular and Deputy electors and that can be used for further treatment. The green cells BL7-BQ21 present the data about the Regular members while the green cells BL27-BQ41 shows the Deputy members. The data of these electors are their "Surname", "Name", "Professor rank", "University Foundation", the "Type of the Elector" and the "Type of the cognitive subject".

The code of the green cells of 1st legible Regular candidate, in the first line (cells BL7-BQ7) of the Final Table is as follows.

For Regular electors the codes (28)-(33) in cells BL7-BQ21, are:

- For “Surname”:  
=IF(BK7=0, “”, IF(\$C\$8= “11members”, VLOOKUP(BK7, \$A\$14:\$G\$43, 2), VLOOKUP(BK7, \$A\$14:\$G\$53, 2))) (28)
- For “Name”:  
=IF(BK7=0, “”, IF(\$C\$8= “11members”, VLOOKUP(BK7, \$A\$14:\$G\$43, 3), VLOOKUP(BK7, \$A\$14:\$G\$53, 3))) (29)
- For “Professor rank”:  
=IF(BK7=0, “”, IF(\$C\$8= “11members”, VLOOKUP(BK7, \$A\$14:\$G\$43, 4), VLOOKUP(BK7, \$A\$14:\$G\$53, 4))) (30)
- For “University Foundation”:  
=IF(BK7=0, “”, IF(\$C\$8= “11members”, VLOOKUP(BK7, \$A\$14:\$G\$43, 5), VLOOKUP(BK7, \$A\$14:\$G\$53, 5))) (31)
- For “Type of Elector”:  
=IF(BK7=0, “”, IF(\$C\$8= “11members”, VLOOKUP(BK7, \$A\$14:\$G\$43, 6), VLOOKUP(BK7, \$A\$14:\$G\$53, 6))) (32)
- For “Same/Related cognitive subject”:  
= IF(BK7=0, “”, IF(\$C\$8= “11members”, VLOOKUP(BK7, \$A\$14:\$G\$43, 7), VLOOKUP(BK7, \$A\$14:\$G\$53, 7))) (33)

The code of the green cells of 1st legible Deputy candidate, in the first line (cells BL27-BQ27) of the Final Table is as follows.

For Deputy electors the codes (34)-(39) in cells BL27-BQ41, are:

- For “Surname”:  
=IF(BK27=0, “”, IF(\$C\$8= “11members”, VLOOKUP(BK27, \$A\$14:\$G\$43, 2), VLOOKUP(BK27, \$A\$14:\$G\$53, 2))) (34)
- For “Name”:  
=IF(BK27=0, “”, IF(\$C\$8= “11members”, VLOOKUP(BK27, \$A\$14:\$G\$43, 3), VLOOKUP(BK27, \$A\$14:\$G\$53, 3))) (35)
- For “Professor rank”:  
=IF(BK27=0, “”, IF(\$C\$8= “11members”, VLOOKUP(BK27, \$A\$14:\$G\$43, 4), VLOOKUP(BK27, \$A\$14:\$G\$53, 4))) (36)
- For “University Foundation”:  
=IF(BK27=0, “”, IF(\$C\$8= “11members”, VLOOKUP(BK27, \$A\$14:\$G\$43, 5), VLOOKUP(BK27, \$A\$14:\$G\$53, 5))) (37)
- For “Type of Elector”:  
=IF(BK27=0, “”, IF(\$C\$8= “11members”, VLOOKUP(BK27, \$A\$14:\$G\$43, 6), VLOOKUP(BK27, \$A\$14:\$G\$53, 6))) (38)
- For “Same/Related cognitive subject”:  
=IF(BK27=0, “”, IF(\$C\$8= “11members”, VLOOKUP(BK27, \$A\$14:\$G\$43, 7), VLOOKUP(BK27, \$A\$14:\$G\$53, 7))) (39)

The same code is performed for all the elected members of the Final Table, depending of the choice of 11 or 15 members E.B. Rightwards, auxiliary cells contain supplementary material for the easiest choice of the “Type of electors”, their “Type of cognitive subject” and the number of members of E.B.

Downwards of the MsExcel program, an example is granted using 15 members of the E.B., for better understanding of the application. All the program cells cannot be changed, except of those that are supposed to be. After its use, the data introduced must be erased so as to protect personal data of the candidates. The use of the program must be performed exclusively by the Secretariats of the Universities, without the participation of others. It’s necessary the checking of the present users while using it, as the Ms Excel program shows them in real time.

## 2.2 The Microsoft Excel program for the drawing by lot of the University students

The paper proposes a 2<sup>nd</sup> Ms Excel program which reduces the total amount of the students randomly, even according their particular characteristic (as their gender). The total amount of them that consists the pool of candidates is introduced in the program (Fig. 10). The numbers of the below Figures represent an example. The program can introduce up to three hundred (300) candidates. If the selection in cell E8 for Gender is “YES”, the total number of Male or Female students is given in cell I8 from the code (40):

=IF(\$H\$8= "Male", COUNTIF(F16:F315, "Male"), COUNTIF(F16:F315, "Female")) (40)

First of all, every data from previous users of the program must be erased. New data of the candidates as "Surname", "Name", "Middle name", "Gender", "ID number", "Email" and "Notes" as the students' semester etc. must be filled in, in cells C16-I315 (Fig. 11). Alternatively, the choices of male-female could be changed to another binary choices. Also, "Id number of students", "Email" and "Notes" give the ability for the user to introduce any alternative data of the candidates.

Next, the randomized drawing by lot for the candidate students is performed using the following codes (Fig. 12):

- The program uses the code (41) for all genders, in cells L16-L315:  
=UNIQUE(RANDARRAY(1000, 1, 1, \$G\$5, TRUE)) (41)
- The program uses the code (42) for Male students, in cells N16-N315:  
= IF(AND(\$E\$8= "YES", VLOOKUP(M16,\$B16:\$F\$315,5)= "Male"),M16, "") (42)
- The program uses the code (43) for Female students, in cells Q16-Q315:  
= IF(AND(\$E\$8= "YES", VLOOKUP(M16, \$B16:\$F\$315, 5)= "Female"), M16, "") (43)

The user must press the button F9 many times (10 times proposed) in order to randomize the drawing by lot. Every change to the program will change the randomized order. For this reason, the user must stabilize the random exported data. The action done is COPY, and SPECIAL PASTE as VALUE all the randomized numbers from orange cells for all genders (in cells L16-L315) or for male students (in cells N16-N315) or for female students (in cells Q16-Q315) to the yellow cells of M16-M315 for all genders, or of O16-O315 for males, or of R16-R315 for females. The results of Male or Female columns produce some blank cells in column O and R respectively, so a new column is created in cells P16-P315 for male students and in cells S16-S315 for female students, in order to be removed these blank cells, using the following codes:

- The program uses the code (44) for Male:  
=FILTER(O16:O315, O16:O315<> "") (44)
- The program uses the code (45) for Female:  
=FILTER(R16:R315, R16:R315<> "") (45)

Furthermore, randomize should occur according the first yellow column of Fig. 12 (namely cells M16-M315) or the columns in cells P16-P315 after the removing of blank cells of Male, either Female (for cells S16-S315).

The merged column cells are presented in cells T16-T315 in the column of "Final List" of Table 2 of Excel Sheet. The code used is (46):

= IF(\$E\$8= "NO", IF(K16<=\$G\$6, M16, ""), IF(\$H\$8= "Male", IF(K16<=\$G\$6, P16, ""), IF(K16<=\$G\$6, S16, "")) (46)

Automatically the exported data of the selected students are presented in the green cells U16-AA315 of Fig. 13. The code (47)-(53) for the first row of the RESULTS is:

- For the exported "Surname":  
=IF(\$T16<>0, IF(\$E\$8= "NO", VLOOKUP(\$T16, \$B\$16:\$I\$315, 2), VLOOKUP(\$T16, \$B\$16:\$I\$315, 2)), "") (47)
- For the exported "Name":  
=IF(\$T16<>0, IF(\$E\$8= "NO", VLOOKUP(\$T16, \$B\$16:\$I\$315, 3), VLOOKUP(\$T16, \$B\$16:\$I\$315, 3)), "") (48)
- For the exported "Middle Name":  
=IF(\$T16<>0, IF(\$E\$8= "NO", VLOOKUP(\$T16, \$B\$16:\$I\$315, 4), VLOOKUP(\$T16, \$B\$16:\$I\$315, 4)), "") (49)
- For the exported "Gender":  
=IF(\$T16<>0, IF(\$E\$8= "NO", VLOOKUP(\$T16, \$B\$16:\$I\$315, 5), VLOOKUP(\$T16, \$B\$16:\$I\$315, 5)), "") (50)
- For the exported "ID Number":  
=IF(\$T16<>0, IF(\$E\$8= "NO", VLOOKUP(\$T16, \$B\$16:\$I\$315, 6), VLOOKUP(\$T16, \$B\$16:\$I\$315, 6)), "") (51)
- For the exported "Email":  
=IF(\$T16<>0, IF(\$E\$8= "NO", VLOOKUP(\$T16, \$B\$16:\$I\$315, 7), VLOOKUP(\$T16, \$B\$16:\$I\$315, 7)), "") (52)
- For the exported "Notes":

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=IF(\$T16<>0, IF(\$E\$8= "NO", VLOOKUP(\$T16, \$B\$16:\$I\$315, 8), VLOOKUP(\$T16, \$B\$16:\$I\$315, 8)), "") (53)

The same code (as the above of line 16 of the green cells of Excel) is performed for all the eligible students in cells M16-M315 (for all genders) or in the cells P16-P315 (for male students) either in the cells S16-S315 (for female students) in Fig. 12. Rightwards, auxiliary cells with supplementary material enable the easiest choice of the genders, and the selection of "YES" or "NO".

All the program cells cannot be changed, except of those that are supposed to be. After its use, the data introduced must be erased so as to protect personal data of the candidates. The MsExcel program demonstrates all the users in real time that participate in the online implementation of the program. It is mandatory that the use of the program must be done exclusively by the Secretariats of the Universities without the participation of others.

### 3. Results and discussion

The main scope of this study is the introduction of Ms Excel applications for the facility of activities of the Universities. The issues for Professors could be the election of the members in the E.B in order to choose the potential best educational and research staff (as "D.E.P."), while another issue is the random selection of a number of students to participate to activities in the Universities. More detailed, the present survey produces technical tools via Ms Excel programming so as to facilitate the election of the members of E.B. and the selection of students.

Criteria are introduced inside the two proposed MsExcel programs. The main choice for the E.B. is the selection of amount of the E.B. (11 members or 15 members) and for the drawing by lot for students is the gender (if required from the problem hypothesis). Restrictions are set by the programs as the maximum number of candidates for E.B. is forty (40) members while the maximum number of candidate students is three hundred (300) members. There is provision as to protect the code of the two programs as these are distributed via internet.

Obviously, the advantages of the usage of these programs are many. Some of them are the computerized election of Professors and selection of students. These procedures exclude malfunctions that may lead to wrong choices and injustices. The whole lives of the Professors (and furthermore of their families), elected by the E.B. could be changed because of a wrong decision. The procedures are based not to a manned way but to a most checked way. Courts and judges should play an important role during a period where precious time would be lost, if a candidate asset his/her rights.

Until nowadays the meetings among the members of the University Departments is performed via internet platforms (as Microsoft Teams, Zoom) because of COVID19. These Universities elect the members of the E.B. using paper processes for random election, but this procedure is vulnerable. It's time, Secretariats to use the simplest spreadsheet program: The Ms Excel program, until the corresponding Ministry of Education and Religion will grant a better web platform for the elections (as Law specifies). The 1st proposed Ms Excel program serves this purpose, as Laws about the elections are particularly complex.

Enriching Ms Excel applications, a second program can be used for the selection of University students from a pool of candidates. That's an easy tool for everyone and in addition can consider the gender of the participants. Also, more candidates' data may be registered in the column "Notes". This program can be used not only for students, but even more for every team of candidates, Municipalities, N.G.O. and other groups can benefit from the program.

The processes and the results of the two MsExcel programs can be saved as recording from the University Secretariat (or any other user for the 2<sup>nd</sup> Ms Excel program), so as to prove anytime the rightness of the election (or selection). Sensitive data of the proposed programs (as their code) cannot be changed, without the permission of the author of this paper. The code will be visible after the publishing of this study so as to be clear to everyone that the code does not hide any virus-codes.

The disadvantages of the MsExcel program for the election of E.B., is the fact that University rules are changing very soon, so the program must adapt these changes. The users of the programs must be educated with tutorials for the best use of them and practice must be performed before the final use of the programs. For this reason, that study grants the steps for the introduction of the data and additionally demonstrates an example for the election of the E.B.'s members. The present study serves the purposes of the University, with fairness and transparency. The programs should be the beginning for creating more programming tools so as to systematically facilitate University and personal activities.

### 4. Concluding Remarks

The present study takes advantage of the technology and computing that must be introduced in the Universities. It considers the most recent Laws about education in Greece. It contributes to the computerized election of the members of E.B. via MsExcel program, using criteria as their number of members (11 or 15).

Also, another MsExcel program selects a randomized group of students from the pool of candidates. The gender of the candidates may be considered and if it is desired the selection could consist of only male students or female students. The paper presents the code of two MsExcel programs which these are distributed via internet, so as to be approachable and visible by Universities, students and people. The advantages of the usage of the programs are a lot, despite the few disadvantages of them. It is predicted the protection of the code, until the publishing of the paper and the protection of the code is non-negotiable.

The results at each occasion are clear and fear while the automated processes guarantee the reliability (according the rightness of the introduced data). Universities should facilitate more easily their activities and obligations, using more practical MsExcel programs in the future.

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### Supplementary material:

<https://doi.org/10.5281/zenodo.14775437>



a) 11 members				b) 15 members			
Type	A/A	RANDOM DRAWING FROM A/A	FINALISATION OF THE DRAW BY LOT	Type	A/A	RANDOM DRAWING FROM A/A	FINALISATION OF THE DRAW BY LOT
REGULAR MEMBERS	1	3	3	REGULAR MEMBERS	1	23	23
	2	21	21		2	14	14
	3	1	1		3	21	21
	4	8	8		4	8	8
	5	7	7		5	15	15
	6	4	4		6	7	7
	7	14	14		7	2	2
	8	19	19		8	16	16
	9	11	11		9	25	25
	10	13	13		10	4	4
	11	2	2		11	24	24
DEPUTY MEMBERS	1	12	12	DEPUTY MEMBERS	12	10	10
	2	16	16		13	6	6
	3	17	17		14	30	30
	4	18	18		15	1	1
	5	5	5		1	5	5
	6	22	22		2	12	12
	7	9	9		3	13	13
	8	15	15		4	20	20
	9	10	10		5	27	27
	10	6	6		6	17	17
	11	20	20		7	19	19

Example

Figure 4: Randomize of candidates, in Unit 2 (Table 2 of Excel Sheet SM: “Election of 11-15 members”)

Type of Electors	N°
Internal memberSame cognitive subject	1
Internal memberRelated cognitive subject	2
External memberSame cognitive subject	3
External memberRelated cognitive subject	4

Figure 5: Merged types of candidates, in Unit 2

a) 11 members			b) 15 members			
Initial A/A	Type	A/A eligible	Type	A/A eligible	Type	
1	Internal memberSame cognitive subject	1	External memberRelated cognitive subject	4	Internal memberRelated cognitive subject	2
2	External memberRelated cognitive subject	4	Internal memberRelated cognitive subject	2	External memberRelated cognitive subject	4
3	Internal memberSame cognitive subject	1	External memberRelated cognitive subject	4	External memberSame cognitive subject	3
4	External memberRelated cognitive subject	4	External memberSame cognitive subject	3	External memberSame cognitive subject	3
5	External memberSame cognitive subject	3	External memberSame cognitive subject	3	Internal memberSame cognitive subject	1
6	Internal memberRelated cognitive subject	2	External memberRelated cognitive subject	4	External memberRelated cognitive subject	4
7	External memberRelated cognitive subject	4	External memberRelated cognitive subject	4	External memberRelated cognitive subject	4

Example Example Example Example Example

Figure 6: Categories according the merged types of candidates, in Unit 2

a) 11 members																			
a/a	CLASSIFICATION OF TYPE 1			Eligible	CLASSIFICATION OF TYPE 2			Eligible	CLASSIFICATION OF TYPE 3			Eligible	CLASSIFICATION OF TYPE 4			Eligible			
1	3	Internal member	Same cognitive subject	1	18	Internal member	Related cognitive subject	2	5	External member	Same cognitive subject	3	16	External member	Related cognitive subject	4			
2	1	Internal member	Same cognitive subject	1	13	Internal member	Related cognitive subject	2	8	External member	Same cognitive subject	3	17	External member	Related cognitive subject	4			
3	11	Internal member	Same cognitive subject	1	20	Internal member	Related cognitive subject	2	22	External member	Same cognitive subject	3	2	External member	Related cognitive subject	4			
4	15	Internal member	Same cognitive subject	1	9	Internal member	Related cognitive subject	2	21	External member	Same cognitive subject	3	10	External member	Related cognitive subject	4			
5					6	Internal member	Related cognitive subject	2					19	External member	Related cognitive subject	4			
6													12	External member	Related cognitive subject	4			
7													14	External member	Related cognitive subject	4			
8													7	External member	Related cognitive subject	4			
9													4	External member	Related cognitive subject	4			
10	↑	Example			↑	Example			↑	Example			↑	Example					
11																			
COUNT=				4					5					4					9

a) Classification for 11 members E. B.

b) 15 members																			
a/a	CLASSIFICATION OF TYPE 1			Eligible	CLASSIFICATION OF TYPE 2			Eligible	CLASSIFICATION OF TYPE 3			Eligible	CLASSIFICATION OF TYPE 4			Eligible			
1	15	Internal member	Same cognitive subject	1	23	Internal member	Related cognitive subject	2	21	External member	Same cognitive subject	3	14	External member	Related cognitive subject	4			
2	24	Internal member	Same cognitive subject	1	25	Internal member	Related cognitive subject	2	8	External member	Same cognitive subject	3	7	External member	Related cognitive subject	4			
3	1	Internal member	Same cognitive subject	1	6	Internal member	Related cognitive subject	2	5	External member	Same cognitive subject	3	2	External member	Related cognitive subject	4			
4	3	Internal member	Same cognitive subject	1	13	Internal member	Related cognitive subject	2	22	External member	Same cognitive subject	3	16	External member	Related cognitive subject	4			
5	11	Internal member	Same cognitive subject	1	20	Internal member	Related cognitive subject	2	28	External member	Same cognitive subject	3	4	External member	Related cognitive subject	4			
6					27	Internal member	Related cognitive subject	2					10	External member	Related cognitive subject	4			
7					18	Internal member	Related cognitive subject	2					30	External member	Related cognitive subject	4			
8					29	Internal member	Related cognitive subject	2					12	External member	Related cognitive subject	4			
9					9	Internal member	Related cognitive subject	2					17	External member	Related cognitive subject	4			
10													19	External member	Related cognitive subject	4			
11													26	External member	Related cognitive subject	4			
12	↑	Example			↑	Example			↑	Example			↑	Example					
13																			
14																			
15																			
COUNT=				4					5					4					9

b) Classification for 15 members E.B.

Figure 7: Ranking of the available Regular – Deputy Electors (according to the drawing of 11 members E.B.), in Unit 3 (Table 3 of Excel Sheet SM: Election of 11-15 members)

A/A	REGULAR ELECTORS		DEPUTY ELECTORS		
	ELECTION FOR MEMBERS TYPE 1	ELECTION FOR MEMBERS TYPE 2	ELECTION FOR MEMBERS TYPE 3	ELECTION FOR MEMBERS TYPE 4	
1	3	18	5	16	
2	1	13	8	17	
3	11	20	22	2	
4	15	9	21	10	
5		6		19	
6				12	
7				14	
8				7	
9				4	
10					
11					
12					
13	↑	↑	↑	↑	
14	Example	Example	Example	Example	
15					
COUNT=		4	5	4	9
		5	6	5	6
1 <sup>st</sup> CHECK: Internal membership requirement: 5 Electors			2 <sup>nd</sup> CHECK: Electoral Body membership requirement: 11 Electors or 15 Electors (as defined)		
OK			OK		

Figure 8: Election of Regular – Deputy members of E.B., in Unit 4 (Table 4 of Excel Sheet SM: Election of 11-15 members)

Choices of Table 3	SURNAME	NAME	Professor rank	University Foundation	Type of Elector	Same/ Related cognitive subject
3	SN3	NM3	PR3	UF3	Internal member	Same cognitive subject
1	SN1	NM1	PR1	UF1	Internal member	Same cognitive subject
11	SN11	NM11	PR11	UF11	Internal member	Same cognitive subject
15	SN15	NM15	PR15	UF15	Internal member	Same cognitive subject
18	SN18	NM18	PR18	UF18	Internal member	Related cognitive subject
13	SN13	NM13	PR13	UF13	Internal member	Related cognitive subject
20	SN20	NM20	PR20	UF20	Internal member	Related cognitive subject
9	SN9	NM9	PR9	UF9	Internal member	Related cognitive subject
6	SN6	NM6	PR6	UF6	Internal member	Related cognitive subject
5	SN5	NM5	PR5	UF5	External member	Same cognitive subject
8	SN8	NM8	PR8	UF8	External member	Same cognitive subject
Example						

15 member Electoral Body (indicated by a large downward arrow on the left)

11 member Electoral Body (indicated by a downward arrow on the left, pointing to rows 3-13)

Figure 9: The final results for Regular members of E.B., in Unit 5 (Final Table of Excel Sheet SM: Election of 11-15 members)

Maximum number of Candidate students: **30** (up to 300 candidates)  
 Number of selected students: **7**

Example

**SELECTION OF STUDENTS, according to their gender:** **YES**

If "YES" is selected, then what gender are you choosing? **Male**

**Number of MALE or FEMALE (of the candidates):** **16**

Example

Figure 10: Choice of number of the selected students

A/A	SURNAME	NAME	Middle name	Gender	ID number of students	Email	Notes (Semester etc.)
1	SN1	NM1	MN1	Male			
2	SN2	NM2	MN2	Female			
3	SN3	NM3	MN3	Male			
4	SN4	NM4	MN4	Male			
5	SN5	NM5	MN5	Female			
6	SN6	NM6	MN6	Female			
7	SN7	NM7	MN7	Female			
continued							
Example							

Figure 11: Candidate students (Table 1 of Excel Sheet SM: Drawing by lot)

	ALL GENDERS		MALE			FEMALE		
	RANDOM DRAWING OF NUMBERS, in order	FINALIZATION OF THE DRAWING, in a row	RANDOMIZE ONLY MALE	IF GENDER "MALE" IS CONSIDERED: Here, COPY-SPECIAL PASTE-VALUE of the beside column N	Removing of the empty cells of MALE	RANDOMIZE ONLY FEMALE	IF GENDER "FEMALE" IS CONSIDERED: Here, COPY-SPECIAL PASTE-VALUE of the beside orange column Q	Removing of the empty cells of FEMALE
A/A	(all genders)		(according to the number of MALE)			(according to the number of FEMALE)		
1	1	1	28	28	28	9	9	9
2	4	4			23			25
3	19	19			3	25	25	6
4	11	11	23	23	8			
5	17	17	3	3	continued			
6	30	30	8	8				
7	15	15				6	6	
continued								
	↑ Example		↑ Example			↑ Example		

Figure 12: Randomize of candidate students (Table 2 of Excel Sheet SM: Drawing by lot)

Selection of the Program, ONLY of those required	SURNAME	NAME	Middle name	Gender	ID number of students	Email	Notes (Semester etc.)
28	SN28	NM28	MN28	Male	0	0	0
23	SN23	NM23	MN23	Male	0	0	0
3	SN3	NM3	MN3	Male	0	0	0
8	SN8	NM8	MN8	Male	0	0	0
12	SN12	NM12	MN12	Male	0	0	0
18	SN18	NM18	MN18	Male	0	0	0
4	SN4	NM4	MN4	Male	0	0	0
↑ Example							

Figure 13: Final results for selected students