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Addendum to a Case Study on Using Spreadsheets to Facilitate Committee Discussions and to Assist Committee Decisions in an Academic Setting: Graduate Admissions of Applicants with Degrees from Chinese Universities

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**Addendum to a Case Study on Using Spreadsheets to Facilitate Committee
Discussions and to Assist Committee Decisions in an Academic Setting:
Graduate Admissions of Applicants with Degrees from Chinese Universities**

1 Justification for the Addendum

In a case study published in *Spreadsheets in Education*, Kwan (2018) has illustrated with various examples how Microsoft Excel can be used to facilitate committee discussions and to assist committee decisions in an academic setting. Among several Excel examples pertaining to graduate admissions, the example in Kwan (2018, Section 4), which assesses the academic quality of individual Chinese universities in the application files, requires an update. Hereafter, for ease of exposition, this specific example is referred to simply as the original example. The update, which is first justified below, is presented in the next section as an addendum to the original example.

The original example is practically relevant, because China is currently the top country of origin of international students at university levels in many English-speaking countries. For example, as reported by the Institute of International Education (IIE), China has been the top country of origin annually since the 2009-2010 academic year. In the 2018-2019 academic year, 377,943 of the 1,095,299 international students in the United States of America were in graduate programs, and 133,396 of these 377,943 graduate students were from China.¹

Currently, 2,186 Chinese university names can be found on the Webometrics website, which provides global rankings of universities according to some web-based criteria.² As a great majority of these universities are known only domestically, graduate admission committees outside China, collectively, not only have many Chinese applicants to consider each year but also have the academic quality of many lesser-known universities in the application files to assess. The use of public information such as annual university rankings can simplify the latter task, as it reveals how individual universities compare with each other within a peer group. For example, Shanghai Jiao Tong University (SJTU), which is a well-known ranking agency, has provided

¹The electronic links are <https://www.iie.org/en/Research-and-Insights/Open-Doors/Data/International-Students/Academic-Level> and <https://www.iie.org/Research-and-Insights/Open-Doors/Fact-Sheets-and-Infographics/Fast-Facts> .

²The electronic link is <http://www.webometrics.info/en/Asia/China%20> .

rankings of 108 Chinese universities in 2018-19.³ Such rankings are part of the SJTU annual rankings of the top 1,000 universities worldwide.

The SJTU annual rankings are based on a composite score of some measures of educational quality, alumni employment, quality of faculty, and research performance. Where a university is positioned among the top 1,000 universities worldwide can be used as an indicator of its academic quality. However, as university rankings are updated annually, the original example has opted instead for a more stable indicator of academic quality that is unaffected by annual fluctuations in the ranking results. As university admissions in China require nationwide entrance examinations, and competitions for admissions to high-quality universities are intense, the original example has justified the use of the membership of a university in the C9 League, Project 985 Universities, Project 211 Universities, or the remaining Chinese universities as an indicator of different levels of academic quality.

The C9 League collectively represents nine elite universities. It is a subset of the 39 top universities sponsored by Project 985 in China. Project 985 Universities, in turn, are in a subset of 115 universities, known collectively as Project 211 Universities, which have met certain quality standards.⁴ For memberships in C9/985/211/Others (as four different categories of universities) to work well as indicators of different levels of academic quality as intended in the original example, all C9 Universities have been separated from the Project 985 group to which they also belong; likewise, all C9 and Project 985 Universities have been separated from the Project 211 group as well.

Project 985 and Project 211 have now been replaced by the Double First-Class Initiative (DFCI), aimed at improving the global recognition of Chinese universities. The DFCI was announced by the Chinese government in 2015 and officially implemented in 2017. The official list of the 140 selected universities under the DFCI also includes the specific discipline or disciplines in each university, which have potentials to achieve world-class status.⁵ Based on current

³The electronic link is <https://cwur.org/2018-19/china.php> .

⁴See the following electronic links for both the general descriptions and the complete listings of C9/985/211 universities: https://en.wikipedia.org/wiki/C9_League , https://en.wikipedia.org/wiki/Project_985 , and https://en.wikipedia.org/wiki/Project_211 .

⁵See the following website of Australian Government, Department of Education, for a description of the DFCI and the two electronic links provided for a complete list of designated universities and supported discipline or disciplines in each university: <https://internationaleducation.gov.au/International-network/china/PolicyUpdates-China/Pages/Double-First-Class-university-and-discipline-list-policy-update.aspx> . The update of the original example is based on information from this online source.

information from various Chinese university websites, however, the usage of the original terms “Project 985 Universities and Project 211 Universities” has remained unaffected.

Among the 140 selected universities under the DFCI, 42 and 98 have been designated as First-Class Universities (FCUs) and First-Class Disciplines Universities (FCDUs), respectively. A major difference between the two designations in terms of the objective to achieve the global recognition is that the former pertains to each university as an entity, but the latter pertains to a specific discipline or a small number of disciplines in each university. The 42 FCUs — with 36 universities in Type A, for their existing strengths, and six universities in Type B, for their future potentials — consist of the 39 C9 and Project 985 Universities and three Project 211 Universities. Among the 98 FCDUs, 73 are from the remaining Project 211 Universities and 25 are outside the original C9/985/211 groups. Thus, the DFCI has brought 25 more universities to the attention of graduate admission committees outside China, along with some fine-tuning of the original classification scheme of universities.

Under the DFCI, 10 broadly-defined academic fields, covering 110 specific disciplines, are being supported. In total, government support extends to 465 individual disciplines in the 140 designated universities. The C9 League as a group is being supported for 168 individual disciplines. The 33 non-C9 FCUs and the 98 FCDUs have 162 and 135 supported disciplines, respectively. There are 77 universities with only one supported discipline in each case. Specifically, three of the 33 non-C9 FCUs and 74 of the 98 FCDUs are such universities. Further, all C9 universities, nine of the 33 non-C9 FCUs, and none of the 98 FCDUs have more than six supported disciplines.

The information as to which discipline or disciplines in each designated university under the DFCI are strong enough to be publicly recognized, as well as financially supported for further improvements, is valuable for graduate admission committees outside China. Such information is particularly valuable for those committees that lack resources to acquire similar information elsewhere. With China being currently the top country of origin of international students in many English-speaking countries, a timely update of the original example to incorporate the available DFCI-based information as well is justified. The main contribution of the update, as presented in the next section, is in organizing such information with the help of Excel tools to facilitate easy access by graduate admission committees, regardless of the disciplines involved.

Although there is no explicit mention of C9, Project 985, and Project 211 Universities in the

official list of supported universities under the DFCI, the membership of a Chinese university in these three groups remains relevant as an indicator of its academic quality. Thus, as described in detail via an Excel example in the next section, the update still retains the same university classification scheme in the original example. For ease of exposition, the original C9/985/211 designation of a university is presented simply as part of the publicly available DFCI-based information.

2 The Addendum

To update the original example, the first step is to store the DFCI-based information succinctly for each of the 140 designated universities in the same row of a worksheet in the Excel file accompanying this paper. The reason for doing so is that if a university name from the application files matches one of the 140 university names, the DFCI-based information pertaining to this university can easily be retrieved. Further, if the key information about the individual applicants for graduate admissions has already been stored in the same Excel file, with one row for each applicant, then it will be straightforward to add any DFCI-based information for each applicant via some simple cell formulas.

For conciseness, the two types of FCUs, all of FCDUs, and all remaining Chinese universities are labeled as A, B, D, and Others, respectively. Each of the 110 supported disciplines is coded as xx(xx), with the first two digits 01, 02, 03, . . . , 10 representing the 10 broadly-defined academic fields, and with the next two digits in parentheses representing the individual disciplines within the field. For example, as there are 13 disciplines in the broadly-defined field of Natural and Physical Sciences, labeled as Field 01, the 13 disciplines, which are Astronomy, Atmosphere Science, Biology, . . . , Statistics and Operational Research in alphabetical order in English translations of the original Chinese document, are labeled here as 01(01), 01(02), 01(03), . . . , 01(13), respectively. The code 01(**) is used to capture all individual disciplines in Field 01. Notice that this coding system, which is for technical convenience in the addendum here, is not part of the public information pertaining to the DFCI.

Figure 1 shows how an Excel worksheet, labeled as FCD, can be set up to add the DFCI-based information to the individual application files. The worksheet can be treated as having three separate parts. For the first part, row 5 shows the headings of various components of the

	A	B	C	D	E	F	G	AS	AT	AU
1	A = First Class University (A) B = First Class University (B) D = First Class Disciplines University									
2										
3										
4										
5	Universities	Original	DSCI	First Class Disciplines				# Dis		
6	Anhui University	Project 211	D	03(23)						1
7	Beihang University	Project 985	A	02(01)	03(01)	03(07)	03(19)			7
8	Beijing Foreign Studies University	Project 211	D	09(08)						1
9	Beijing Forestry University	Project 211	D	04(02)	05(07)					2
10	Beijing Institute of Technology	Project 985	A	03(03)	03(07)	03(23)				3
11	Beijing Jiaotong University	Project 211	D	02(02)						1
12	Beijing Normal University	Project 985	A	01(05)	01(06)	01(10)	02(02)			11
13	Beijing Sport University	Project 211	D	06(08)						1
14	Beijing University of Chemical Technol	Project 211	D	03(05)						1
15	Beijing University of Chinese Medicine	Project 211	D	06(03)	06(07)	06(10)				3
16	Beijing University of Post and Telecom	Project 211	D	02(01)	03(18)					2
17	Beijing University of Technology	Project 211	D	03(06)						1
18	Capital Normal University	Others	D	01(10)						1
143	Zhejiang University	C9	A	01(03)	01(04)	01(05)	02(01)			18
144	Zhengzhou University	Project 211	B	01(04)	03(23)	06(02)				3
145	Zhongnan University of Economics and	Project 211	D	09(10)						1
146										
147	First Class Disciplines (# Universities)	Codes								
148	Natural and Physical Sciences (100)	01(**)								
149	Astronomy (2)	01(01)								
150	Atmosphere Science (3)	01(02)								
264	Drama and Film Studies (3)	10(04)								
265	Fine Arts (2)	10(05)								
266	Journalism and Communication (2)	10(06)								
267	Music and Dance Studies (3)	10(07)								
268										Fld/Dis
269										01(**)
270	Univ Names from Application Files	Original	DSCI	First Class Disciplines				# Dis	#	ID
271	Zhejiang University	C9	A	01(03)	01(04)	01(05)	02(01)	18	3	AA
272	Beijing Normal Univ*	Project 985	A	01(05)	01(06)	01(10)	02(02)	11	3	BB
273	Zhengzhou University	Project 211	B	01(04)	03(23)	06(02)		3	1	CC
274	Beijing Forest* Univ*	Project 211	D	04(02)	05(07)			2	0	DD
275	Capital Normal University	Others	D	01(10)				1	1	EE
276	Baicheng Normal University	Others	Others							FF
277	Changchun Institute of Technology	Others	Others							GG
278										

Codes	FC Disciplines (# Univ)
01(05)	Ecology (11)
02(05)	No Match
06(**)	Health (46)

Figure 1. An Updated Excel Example with DFCI-Based Information.

DFCI-based information for the 140 designated universities, as displayed in rows 6 to 145. The 140 university names and the corresponding C9/985/211 and A/B/D memberships are stored in A6:C145. As there are as many as 41 supported disciplines in a designated university, the 140×41 block D6:AR145 is used to store the discipline codes for the individual universities. The individual discipline codes in each row are stored in an ascending order, followed by as many blank cells as necessary. The number of supported disciplines in each designated university is shown in AS6:AS145, under the Column heading of “# Dis” in AS5. For this task, the cell formula in AS6, =COUNTIF(D6:AR6,"*")-COUNTIF(D6:AR6,""), is copied to AS6:AS145. To keep the entire Figure 1 on one page, rows 19 to 142 are intentionally hidden; so are columns H to AR.

The second part of the Excel worksheet uses a two-column table to show the correspondence between the 110 supported disciplines in 10 broadly-defined academic fields and the assigned codes in D6:AR145. The corresponding numbers of designated universities are also indicated in this table. The headings are provided in A147:B147, and the 120×2 block A148:B267 covers both the fields and the individual disciplines in each field. Again, to keep the entire Figure 1 on one page, rows 151 to 263 are intentionally hidden. A duplicate of the worksheet FCD, where all hidden rows and columns are unhidden instead, is labeled as FCD(All_Visible).

Next to the above table are some cells that display the discipline names and the corresponding numbers of designated universities for the discipline codes provided. For the code that is entered manually to D265, the formula in E265 is =IF(D265="", "", IFERROR(INDEX(\$A\$148:\$A\$267, MATCH(D265,\$B\$148:\$B\$267,0)), "No Match")). The cells in D265:D267 are shaded, and the above formula is pasted to E265:E267. As what each discipline code represents may not be immediately clear, the use of Excel functions INDEX and MATCH in the above manner will bypass the tedious task of reading this table in its entirety for the same information each time. Notice that, if fewer rows of this table are hidden, more manually-entered codes and the corresponding descriptions can be displayed at the same time.

The third part of the Excel worksheet starts from row 268. The same headings in row 5 have been replicated in row 270. The seven university names that have been entered to the shaded cells in A271:A277 are for illustrative purposes. Each of these university names is for retrieving the DFCI-based information from the first part of the Excel worksheet, to be recorded in the corresponding row if there is a name match. For example, as the name Zhejiang University

in A271 matches the one in A143, the DFCI-based information in B143:AR143 is retrieved and stored in B271:AR271. If there is no name match, the indicator "Others" will appear in the two corresponding cells in columns B and C.

The cell formula for each of B271 and C271, which is based on an idea similar to that in the original example, is `=IF($A271="", "", IFERROR(VLOOKUP(TRIM($A271), A6:AR145, COLUMN(), FALSE), "Others"))`. The use of the function COLUMN is for retrieving the same information from the cell in the same column if there is a name match. Each cell formula in D271:AS271 is `=IF($A271="", "", IF($C271="Others", "", IFERROR(VLOOKUP(TRIM($A271), A6:AS145, COLUMN(), FALSE), "Others")))`. This formula differs from the one above in that it skips the information retrieval if there is no name match. The cell formulas in B271:AS271 have been pasted to the corresponding cells in several subsequent rows.

Notice that, when abbreviated university names — such as the use of “Univ” for “University” — are provided, the use of an asterisk immediately following each abbreviated word is necessary; doing so will ensure that the function VLOOKUP in each of the cell formulas above still works. The names in A272 and A274 are such examples. Further, the use of the function TRIM in the same cell formulas is intended to avoid mismatches, in case that extra spaces have been left inadvertently in the university names provided. However, the cell formulas above cannot accommodate spelling errors in university names.

Some English translations of university names as retrieved from the online source in footnote 5 may have been abbreviated. For example, in cell A88 — which is visible in the Excel worksheet FCD(All_Visible) — Northwest A&F University is the name of a Project 985 University. However, if this university is recorded in an application file more formally as Northwest Agriculture and Forestry University instead, then no match will be found. As a remedy, an extra row can be inserted, between rows 6 and 145, to replicate the same information in row 88, except for this equivalent English translation of the university name. Likewise, for cases where both “&” and “and” are acceptable as part of an official university name, the above remedy is applicable as well. The resulting rows can also be sorted alphabetically according to university names, if deemed necessary.

A simple method to add the DFCI-based information to the application files in graduate admissions is first to record the key information about each applicant in the same row of an Excel worksheet, with different rows intended for different applicants. Such information can

be pasted subsequently to the above Excel worksheet in consecutive rows starting from row 271 and column AU. To illustrate below, suppose that seven applicants, labeled as AA, BB, CC, ..., GG in AU271:AU277, are being compared. Suppose also that the university names in A271:A277 are retrieved from the corresponding rows containing the key information about the individual applicants.

For a field or discipline code provided in AT269, which is shaded, the search for a match between it and the codes in each row of the block D271:AR277 can be via a cell formula. In Figure 1, as the code provided in AT269 is 01(**), which represents the broadly-defined field of Natural and Physical Sciences, the number of supported disciplines in each university in A271:A277 is shown in the corresponding row in column AT. For this task, the formula in AT271, =IF(OR(C271="Others",C271=""),"",COUNTIF(D271:AR271, AT\$269)), is pasted to AT271:AT277 and further down in the same column. Notice that, if the code provided in AT269 is, for example, 01(10) instead, as the two matches are in the second and the fifth of the same seven universities, they will be indicated accordingly, with 1 being the number of supported disciplines in each case. Notice also that, if the university is not among the 140 designated universities the corresponding cell in column AT will be left blank as intended.

When the key information about the individual applicants is stored in separate rows, with one row for each applicant, as is done in this update of the original example, the data involved can easily be sorted to show how well an applicant compares with others according to some specific metrics. The DFCI-based information is a valuable addition to the existing set of publicly available information for assessing applicants with degrees from Chinese universities. The main contribution of this update is in the organization of such information in an Excel setting, thus allowing it to be used efficiently by graduate admission committees.

Reference

Kwan, C.C.Y., "Using Spreadsheets to Facilitate Committee Discussions and to Assist Committee Decisions in an Academic Setting: A Case Study," *Spreadsheets in Education*, 10, Issue 2, (2018), Article 4.