Evaluation of Academic Performance Oriented International University Ranking Systems Based on General Rankings and Criteria

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IREG 2018
Need for ranking

- Use in daily life
  - Which hospital to choose for an operation, best students

- Need for comparing and making decision
  - Top ten research universities in Turkey, academic support
Ranking of universities

• Started nationally

• First international university ranking
  - ARWU, 2003

• Why they appeared? – For which reasons we use them today?

• Number of international university ranking systems in 2017 is 18
Milestones (Internationally)

- ARWU annual meetings
- Higher Education in Europe, special issues by year of 2005
- OECD IMHE (2006)
Situation in Turkey

• URAP, 2010

• The Scientific and Technological Research Council of Turkey, The Supreme Council for Science and Technology, 2011

• Higher Education Council of Turkey, 2014

• University documents on academic promotion

• Hacettepe University, Congregation, April 2017
Problem

• Conception of rankings
• Importance given

• Evaluation of overall ranking lists
• Effect of indicators, methodology, data source and weightings
• Correlation between indicators
• University-size-dependent indicators
Research and method

• Similarity of overall ranking lists
  - Similarity measures
  - Heat maps

• Change in the position of universities
  - Scatter plots
  - Scatter matrixes

• Similarity of indicators
  - Multidimensional scaling
  - Spearman correlation coefficients
  - Cosine similarity measure
Similarity of overall ranking lists

- Similarity for the same ranking system by years
  - High and very high similarities
  - Lowest for THE (0.65)
  - Lower similarity for the top 100

- Similarity of the rankings in a certain year
  - ARWU, NTU, URAP, CWUR, US
  - THE, QS

- Effect of indicators, methodology and data source
Change in position of universities

• Similarity for the same ranking system by years
  - The most abrupt changes in URAP (changes >1000 ranks)
  - THE 2010-2011 and 2014-2015 rankings

• Similarity of the rankings in a certain year
  - Important effect of THE, QS, URAP and CWUR for position change

• Effect of indicators, methodology and data source

• Changes in score – changes in ranks
Similarity of indicators

• Similar indicator groups

• Ranking lists from the only one indicator from similar indicators groups are very similar to the existing ranking
  • Mainly for URAP, NTU and THE
  • Except QS

• University-size-dependent indicators effect ARWU and NTU, not effect URAP

• Problem of using very similar/correlated indicators in the same ranking
Added value (1)

• A few studies using similarity measures
• Number of international university rankings compared
• Number of universities compared
• Year limitation
• First use of heat maps for this aim
• Lower similarity values for the top 100
• Standardization of university names
Added value (2)

• Lack of comprehensive studies comparing the position of universities (generally for top 10, top 20)

• Comparing of fewer ranking systems

• Comparing of comparable ranking systems

• Different ranking systems from the commonly used/studied

• Visual presentation, interactive graphs
Added value (3)

• No studies for the correlated/similar indicators except ARWU
• Going beyond of determining similar/correlated indicators
• Cosine similarity values
• Multidimensional scaling
Last words ...

• What are the university rankings measure and how?
• University quality ≠ Rank of the university
• Evaluating the rankings taking the definition of universities into consideration
• Using of university rankings for decision/policy making
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