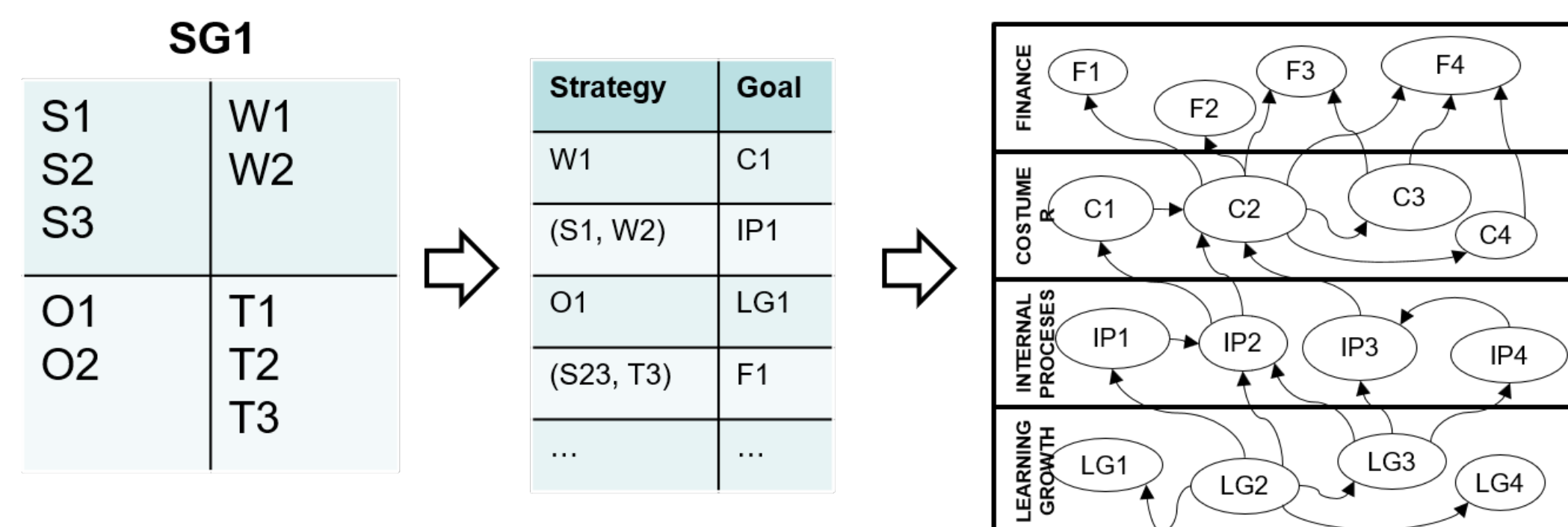# RANKING THE BALANCED SCORECARD GOALS OF HIGHER EDUCATION INSTITUTIONS USING THE CENTRALITY MEASURES

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OBJECTIVES AND RESERACH QUESTION

- Higher education institutions (HEI) often use different quality systems - Balanced scorecard (BSC) or Total quality management (TQM), for strategic planning of their growth and development.

- In BSC, a strategic map of goals that are placed into one of several BSC perspectives is created; connections between the goals respecting the influences between the goals of HEI are defined.

- The rule is that the goals from a particular perspective can influence any goal from the same or higher BSC perspective. The reasoning related to the identification of connections between the goals have to be made by experts.

- **BSC goals are not equally important.**

- **Research question: How to rank and prioritize BSC goals?**

- This paper deals with this issue:

  - **ranking the BSC goals of HEI using the centrality measures: centrality degree, betweenness centrality, closeness centrality, and the PageRank centrality**

  - **comparing the results with ranking the BSC goals using multi-criteria decision-making methods the AHP and the ANP.**

STRATEGIC PLANNING IN HEIs USING BSC

- Identify vision, mission and strategic goals
- Make the SWOT analysis of each strategic goal
- Create the strategies (corrective, defensive, offensive) – activities that contribute to the achievement of goals
- Define operative goal or each strategy
- Join goals to the perspective (5 perspectives for HEIs)
- Identify influences between the goals
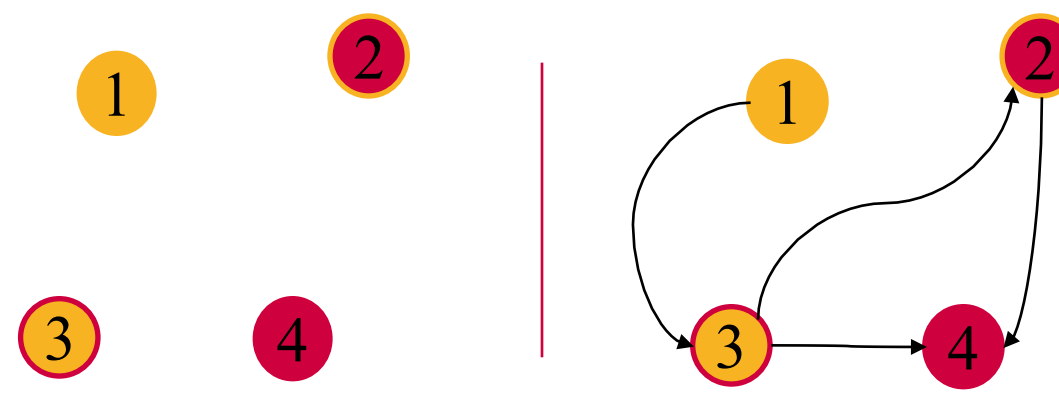
RANKING BSC GOALS USING AHP AND ANP

Two possible ways of how to apply AHP in order to rank BSC goals:
- create a one-level hierarchy of all BSC goals that can be further compared in pairs in one pairwise comparison table
- create a two-level hierarchy of all BSC goals - the first level in the hierarchy are perspectives, and the second level of the hierarchy are goals from related perspectives

The disadvantages of approaches in this context are:
- Influences between the BSC goals do not affect the ranking,
- In the one-level of BSC goals, the number of pairwise comparisons is too high. It is almost impossible to make all judgments correctly in the pairwise comparisons table.

The advantage of using the ANP to rank BSC goals is in fact that the influences are included, but the disadvantage is that goals will achieve total priority of 0.0

RANKING BSC GOALS USING CENTRALITY MEASURES

When the BSC goals are ranked using the centrality degree (prestige), the influences between the elements are included in the calculation of BSC goals priorities. However, only the priorities are calculated using only direct influences between goals, and that is a disadvantage of this method.

When closeness and betweenness centrality are used, most of the BSC goals achieve weight 0.0 because of the similar reasons that appeared in implementing the ANP – the density of the network is low, and there is no directed path between any two elements in the network.

When a Pagerank centrality is used, we achieve the most favorable situation: influences between the elements are included into the calculation of final BSC goals' priorities, the final priorities are comparable (there is no situation of the weight of 0.0).
The best way of ranking the BSC goals IS Pagerank centrality (among methods that are analyzed in this paper).

FROM SWOT TO BSC

## BSC GOALS - HEIs

M1 Educate students that could be competitive on the job market
M2 Be university unit internationally recognised
M3 Reach excellence and synergy of research and teaching,
J1 Foster transparency and responsibility in public
J2 Increase efficacy, efficiency and economy in teaching, scientific and professional activities and business,
J3 Be a proactive unit of the University in the field of planning, management, leadership and strategic guidance,
J4 To ensure equal possibilities for students from vulnerable and underrepresented groups,
D1 Strengthen the teaching programs for lifelong learning and adult education aligned with labour market needs,
D2 Increase the efficiency of studying,
D3 Strengthen national and international project-oriented cooperation in strategic fields,
D4 Foster the culture of entrepreneurship,
D5 Encourage excellence, improve quality of teaching, scientific and professional activities,
D6 Improve national and international scientific recognition,
P01 Revise the existing programs - align with labour market needs, introduce new content and teaching methods,
P02 Improve the quality of teaching process,
P03 Increase the visibility
P04 Foster internationally recognised excellence in research
P05 Intensify the research activities within strategic fields,
P06 Strengthen international mobility and recognizability,
P07 Intensify the cooperation with business and general public focusing on strategic fields,
P08 Encourage the creation and use of open resources - open access to scientific information, use of open code,
P09 Intensify publishing activities
P10 Foster the culture of tolerance, multiculturalism, humanitarian and volunteering,
P11 Strengthen the capacity for strategic management,
P12 Foster the culture of academic rectitude,
P13 Foster student entrepreneurship,
U01 Improve teaching competencies and potentials of staff,
U02 Improve professional competencies and potentials of staff,
U03 Improve competencies and potentials of supporting staff,
U04 Improve spatial, information and computational infrastructure,
U05 Innovate the fields of interest and expand to new fields,
U07 Introduce new technological solutions and methodological approaches to teaching,
U08 Improve and innovate business processes continually.