



Asian Institute of Technology

School of Engineering and Technology

Department of ICT

Computer Science and Information Management

Data Science and AI Program

[AT 82 - DSAI] Business Intelligence and Analytics (BI&A)

Assignment 2

by

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Assignment 2

Multi Criteria Decision Making

Analytic Hierarchy Process

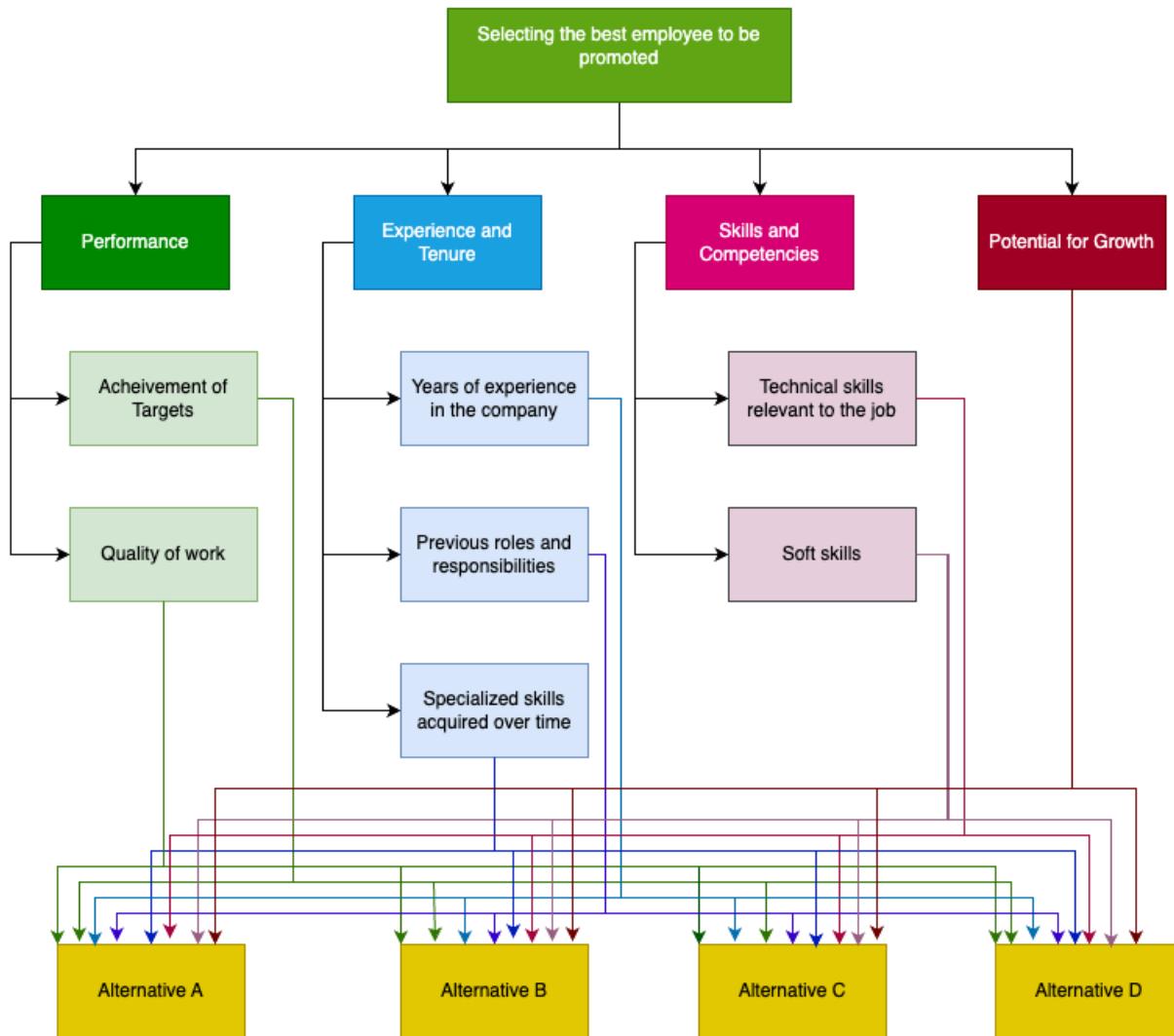
Step 1: Define the problem and Criteria

1.1 Define the problem

Scenario3: Selecting the best employee to be promoted

1.2 Criteria Identification:

- Performance:
 - *Sub-criteria:*
 - Achievement of targets
 - Quality of work
 - Leadership skills
- Experience and Tenure:
 - *Sub-criteria:*
 - Years of experience in the company
 - Previous roles and responsibilities
 - Specialized skills acquired over time
- Skills and Competencies:
 - *Sub-criteria:*
 - Technical skills relevant to the job
 - Soft skills like communication, teamwork, problem-solving
 - Adaptability and learning agility
- Potential for Growth:
 - *Sub-criteria:*
 - Willingness to take on new challenges
 - Capacity for leadership roles in the future
 - Ability to innovate and drive change



Step 2: Define Alternatives

2.1 Define Alternatives

I have 4 alternatives to select the best employee to be promoted: employee A, employee B, employee C, employee D for the position.

2.2 Define Characteristics of the grading of each criteria

Grade	1-2	3-4	5	6-7	8-9
	Performance				
Achievement of Targets	Fails to meet targets regularly	Rarely meets targets	Occasionally meets targets	Meets targets consistently	Exceeds targets consistently
Quality of Works	Poor quality work with significant errors	Below-average quality with noticeable errors	Satisfactory quality but requires improvement in some areas	High-quality work with occasional minor errors	Exceptional quality with minimal errors
	Experiments and Tenure				
Years of Experiences	Less than 1 year of experience	1-3 years of experience	4-6 years of experience	7-9 years of experience	10+ years of experience
Previous roles and responsibilities	Inexperienced or poorly performed in previous roles	Limited experience in previous roles, struggled	Satisfactory performance in previous roles but limited	Consistently performed well in previous roles with notable	Held significant leadership roles with notable

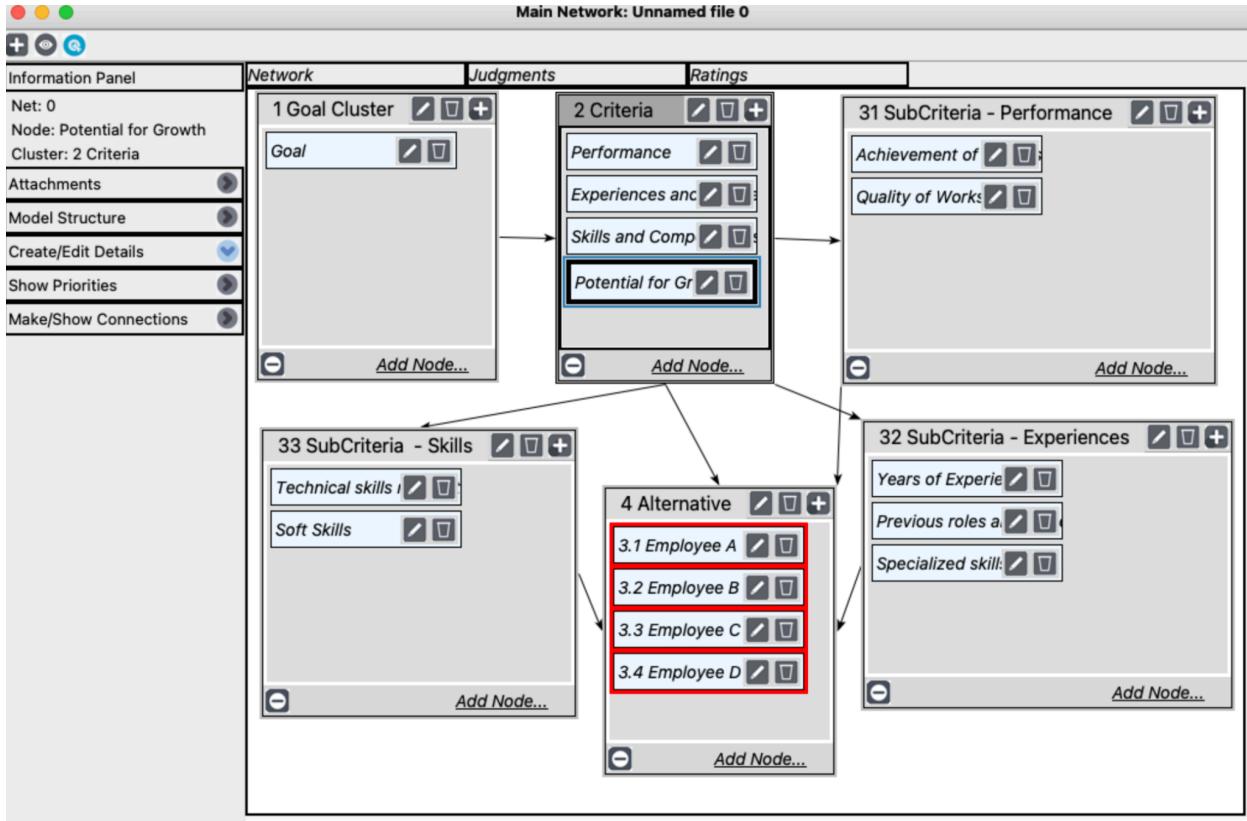
		with responsibilities	leadership experience	increasing responsibilities	responsibilities
Specialized skills	Lacks any relevant specialized skills for the job	Limited specialized skills, requires significant improvement	Adequate level of specialized skills but lacks depth or variety	Proficient in several specialized skills relevant to the job	Mastered multiple specialized skills relevant to the job
Skills and Competencies					
Technical skills relevant to the job	Lacks essential technical skills required for the job	Limited technical skills, requires significant training or development	Adequate level of technical skills but may require training or improvement in some areas	Proficient in most technical skills required for the job	Highly proficient in all technical skills required for the job

Soft Skills	Poor soft skills, significant improvement needed in communication, teamwork, and problem-solving	Below-average soft skills, struggles with communication, teamwork, or problem-solving	Demonstrates satisfactory soft skills but may need improvement in some areas	Strong communication, teamwork, and problem-solving skills	Exceptional communication, teamwork, and problem-solving abilities
Potential for Growth					
Potential for Growth	Resistant to taking on new challenges, avoids new responsibilities	Hesitant to take on new challenges, requires persuasion or motivation	Open to new challenges but may need encouragement or guidance	Willing to take on new challenges when presented, shows initiative	Eager and proactive in seeking out new challenges and opportunities

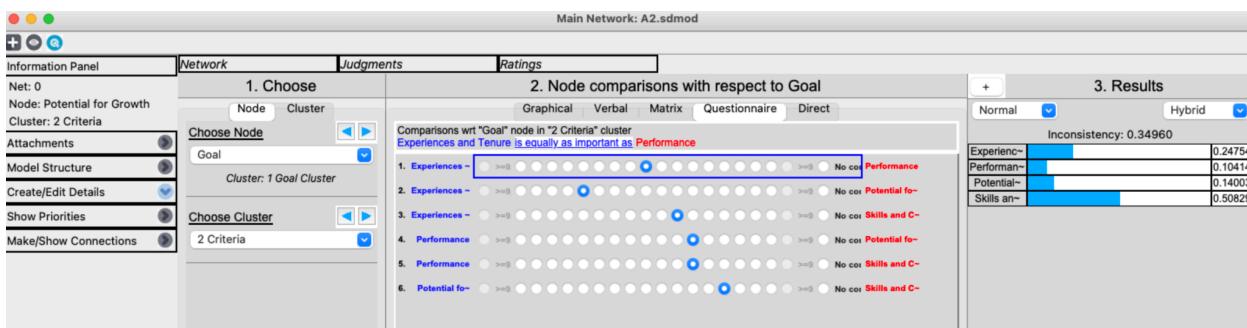
2.3 Define Employee Characteristic Table

	Employee A	Employee B	Employee C	Employee D
	Performance			
Achievement of Targets	9	7	5	5
Quality of Works	7	7	5	5
	Experiments and Tenure			
Years of Experiences	9	8	5	1
Previous roles and responsibilities	7	6	4	3
Specialized skills	8	9	4	2
	Skills and Competencies			
Technical skills relevant to the job	5	7	5	5
Soft Skills	7	9	7	7
	Potential for Growth			
Potential for Growth	7	8	6	4

Step 3: Establish priority amongst criteria and alternatives using pairwise comparison.

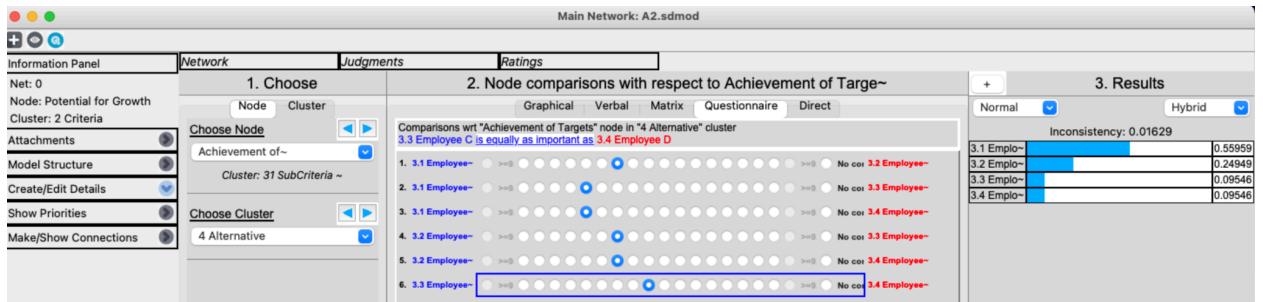


Step 4: Check consistency amongst the pairwise comparison.

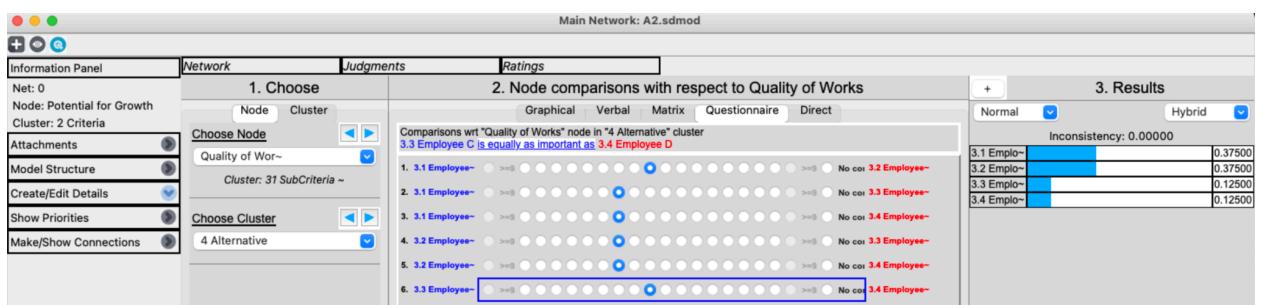


Step 5: Evaluate relative weights from the pairwise comparisons and get the calculated overall priorities for the alternatives.

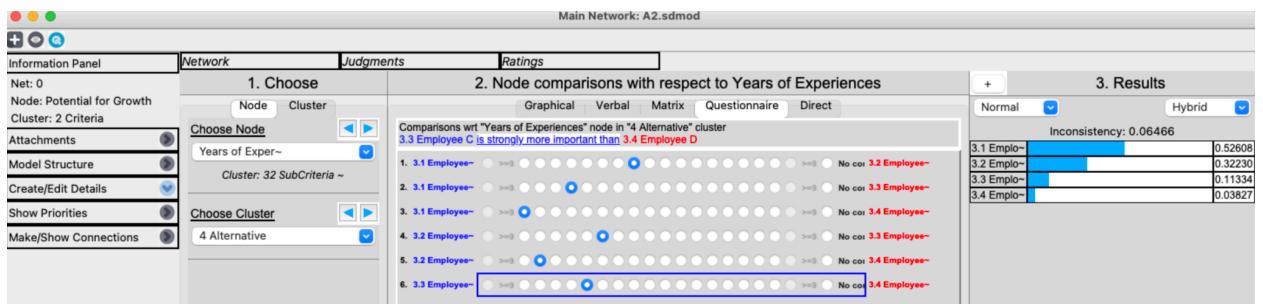
1. Achievement of Targets



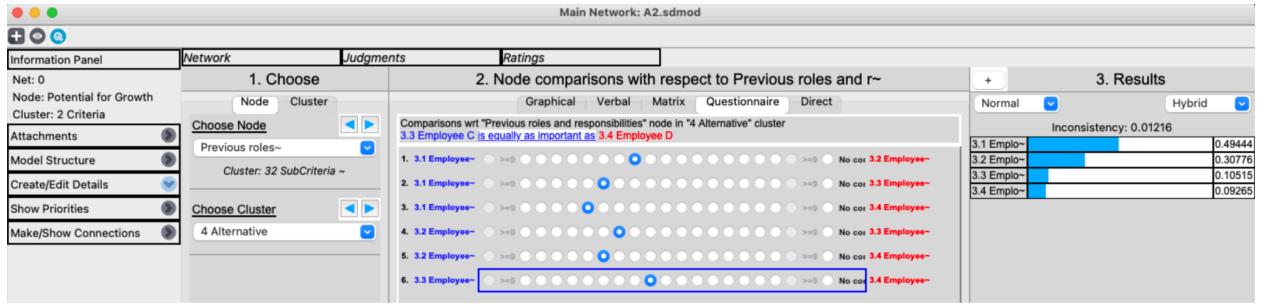
2. Quality of works



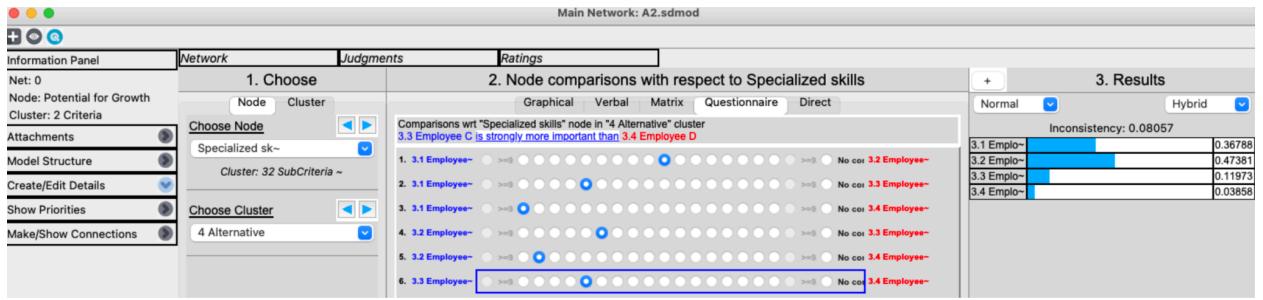
3. Years of Experiences



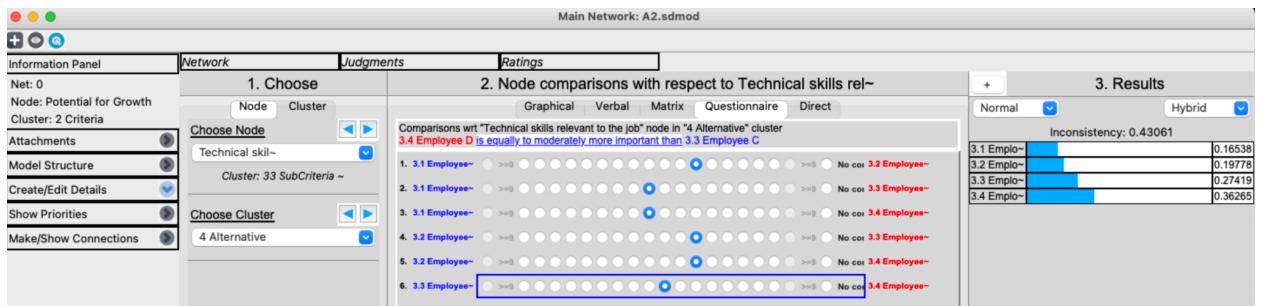
4. Previous roles and responsibilities



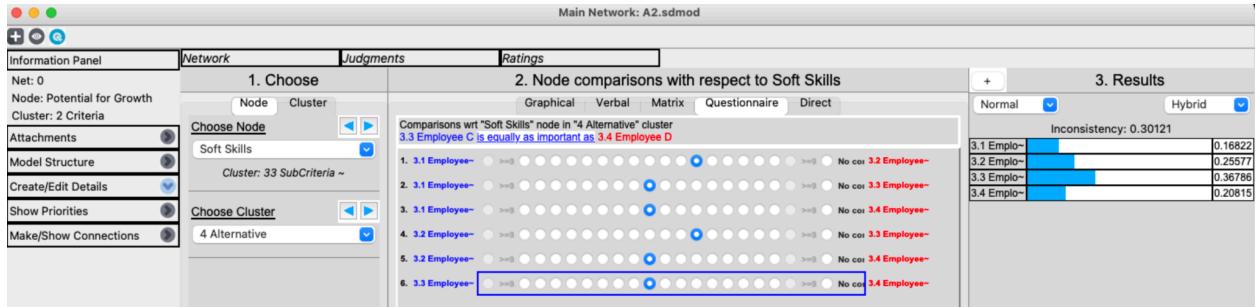
5. Specialized skills



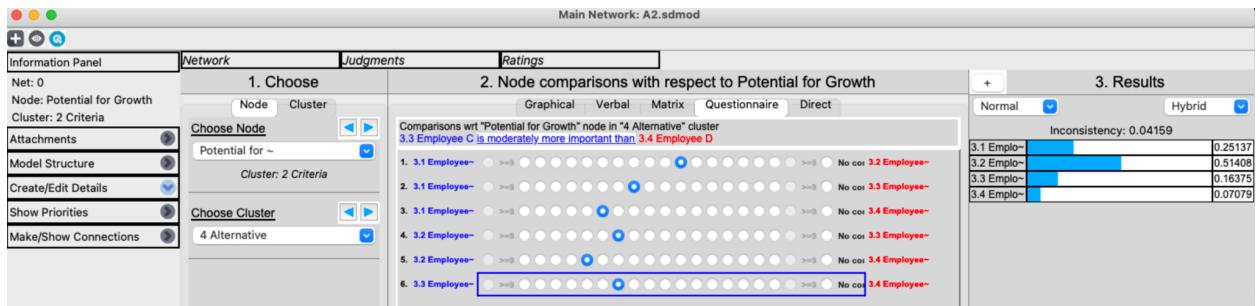
6. Technical skills relevant to the job



7. Soft Skills



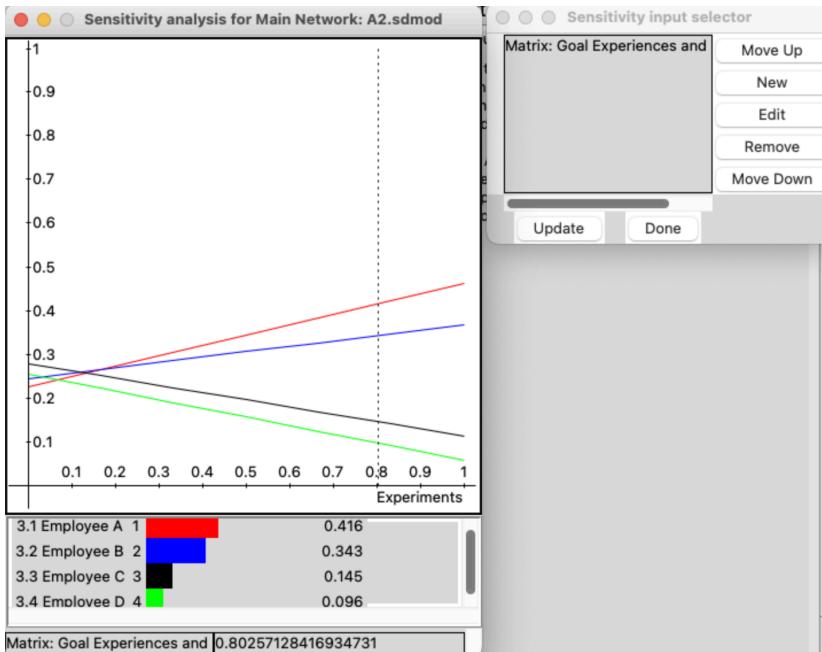
8. Potential for growth



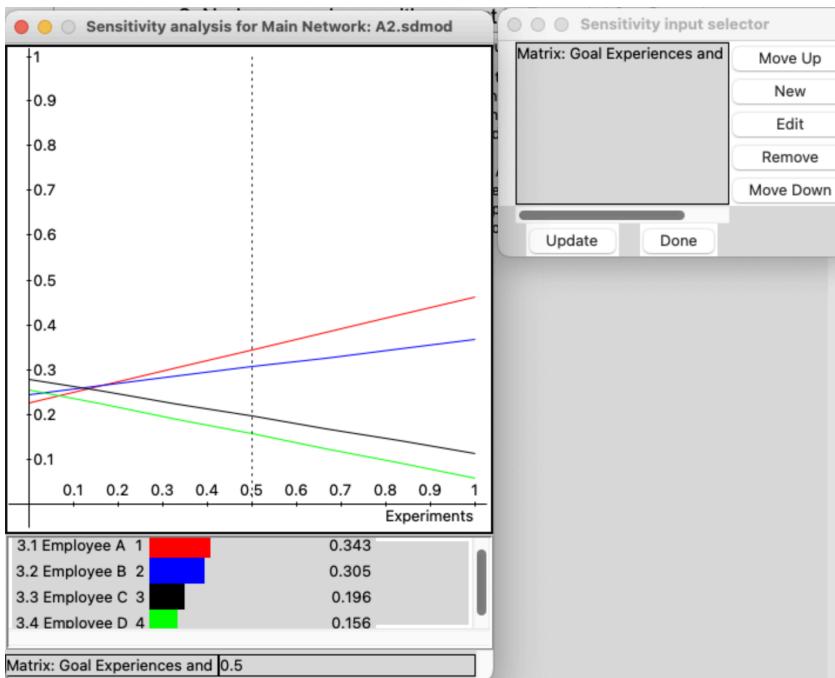
Step 6: Perform Sensitivity Analysis

1. Goal with Experience and Tenure

When experience and tenure is 0.8, employee 1 would be the best choice to promote.

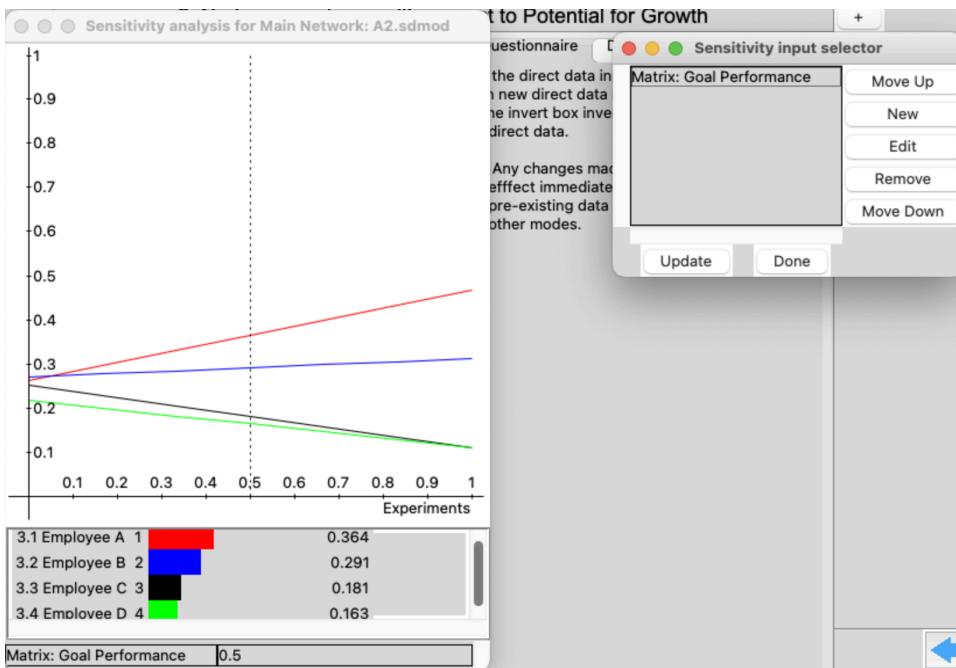


When experience and tenure is 0.5, employee 1 would be the best choice to promote.

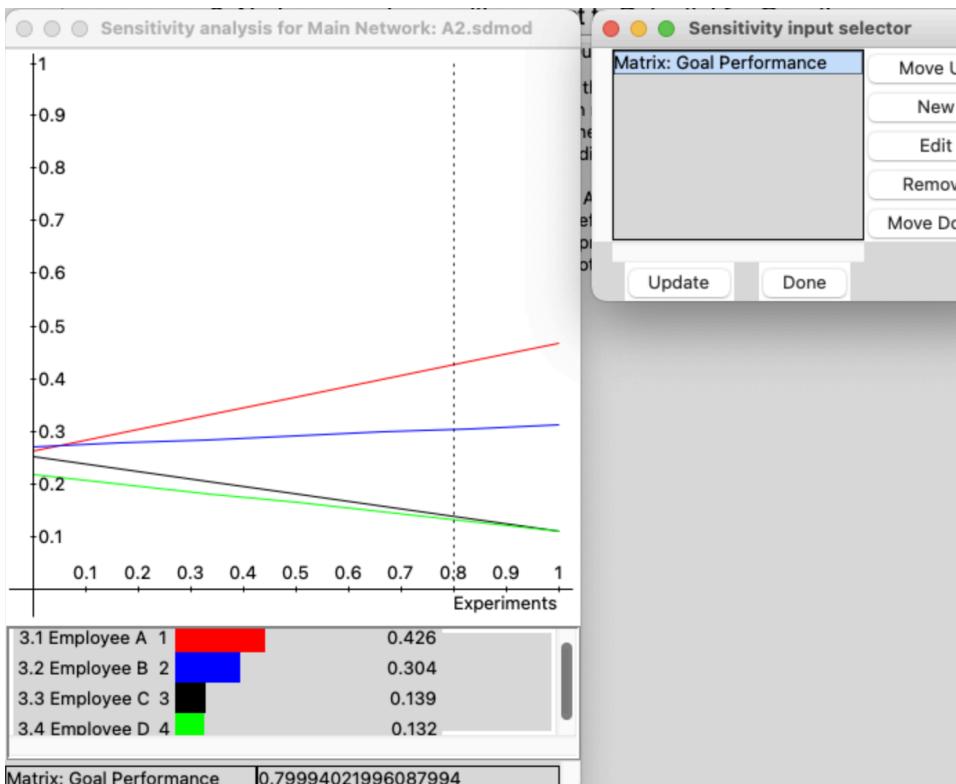


2. Goal with Performance

When performance is 0.5, employee 1 would be the best choice to promote.

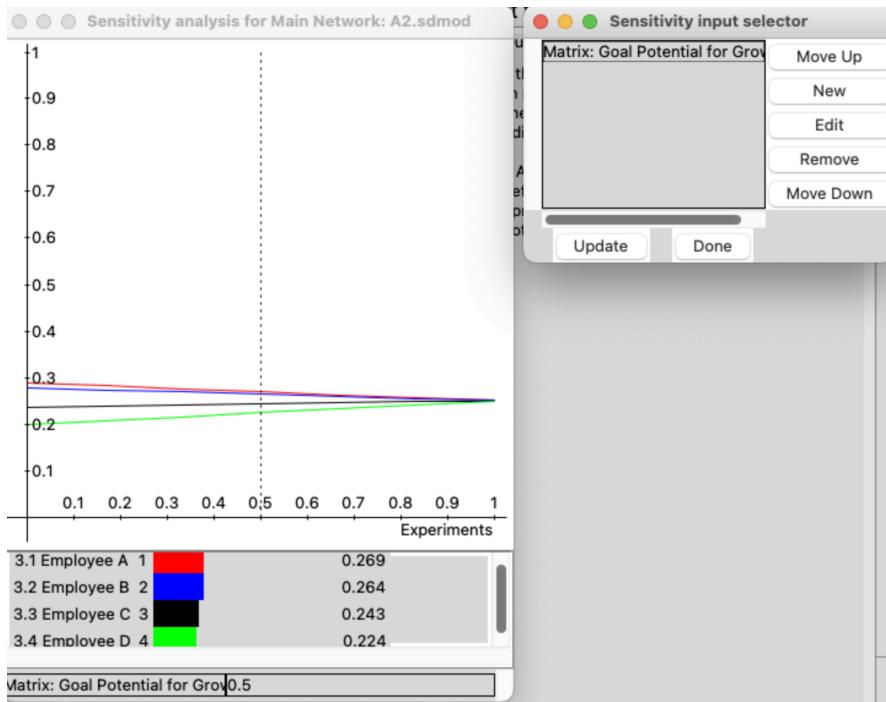


When performance is 0.8, employee 1 would be the best choice to promote.

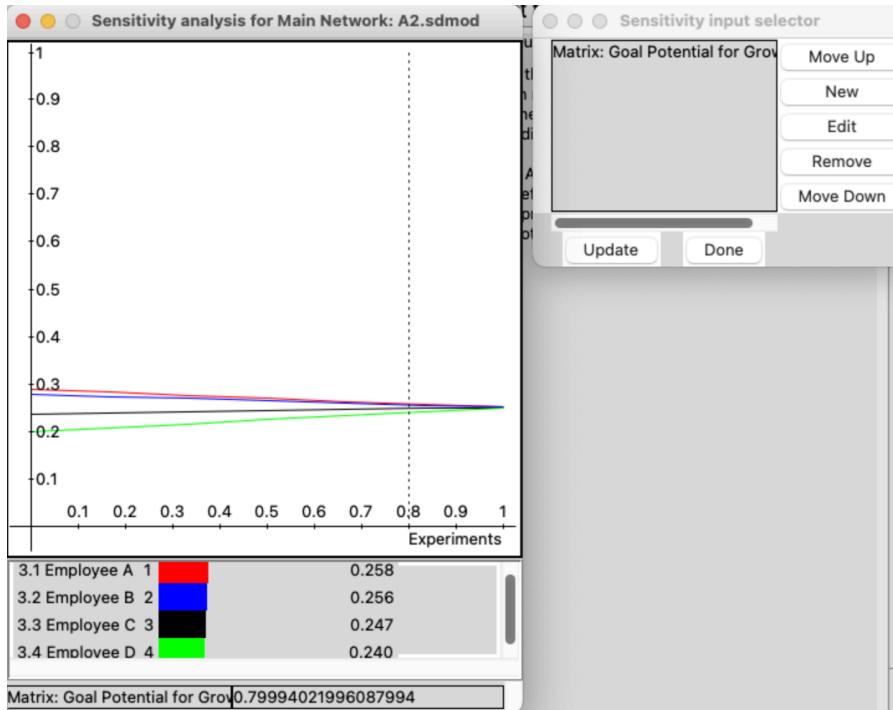


3. Goal with Potential for Growth

When potential for growth is 0.5, employee 1 would be the best choice to promote.



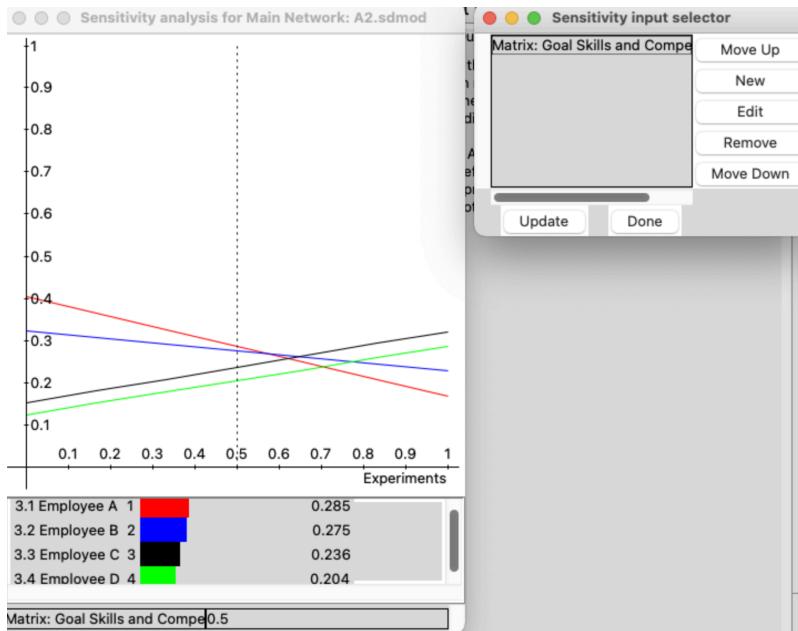
When potential for growth is 0.8, employee 1 would be the best choice to promote.



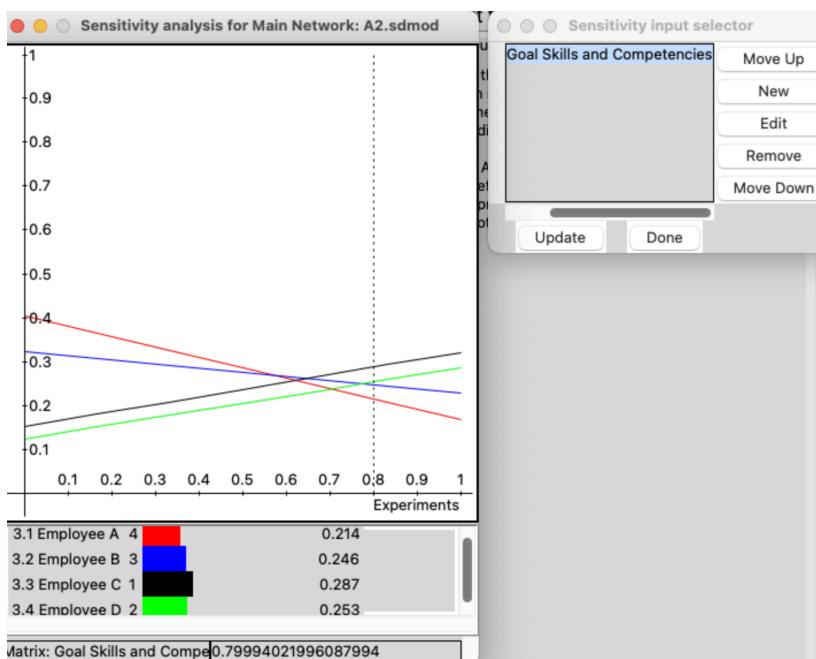
In this case, the results of employee 1 and 2 are not different. So, we can choose both.

4. Goal with Skills and Competencies

When skills and competencies is 0.5, employee 1 would be the best choice to promote.



When skills and competencies is 0.8, employee 3 would be the best choice to promote.



Step 7: Report from Super Decision Software

Main structure of toplevel network

What follows a brief recap of this network.

If you would like to, you can [return to the main menu](#).

Alternative(s) in it:	<ul style="list-style-type: none">• 3.1 Employee A• 3.2 Employee B• 3.3 Employee C• 3.4 Employee D
Network Type:	Bottom level
Formula:	Not applicable
Clusters/Nodes	<ul style="list-style-type: none">• 1 Goal Cluster: <i>Selecting the best employee to be promoted</i><ul style="list-style-type: none">◦ Goal:• 2 Criteria:<ul style="list-style-type: none">◦ Experiences and Tenure:◦ Performance:◦ Potential for Growth:◦ Skills and Competencies:• 4 Alternative:<ul style="list-style-type: none">◦ 3.1 Employee A:◦ 3.2 Employee B:◦ 3.3 Employee C:◦ 3.4 Employee D:• 31 SubCriteria - Performance:<ul style="list-style-type: none">◦ Achievement of Targets:◦ Quality of Works:• 32 SubCriteria - Experiences:<ul style="list-style-type: none">◦ Previous roles and responsibilities:◦ Specialized skills:◦ Years of Experiences:• 33 SubCriteria - Skills:<ul style="list-style-type: none">◦ Soft Skills:◦ Technical skills relevant to the job:

Report for toplevel

This is a report for how alternatives fed up through the system to give us our synthesized values. [Return to main menu](#).

Alternative Rankings

Graphic	Alternatives	Total	Normal	Ideal	Ranking
█	3.1 Employee A	0.0990	0.2830	1.0000	1
█	3.2 Employee B	0.0958	0.2739	0.9677	2
█	3.3 Employee C	0.0831	0.2376	0.8394	3
█	3.4 Employee D	0.0719	0.2055	0.7262	4

Step 8: Final Decision

According to the report, I can choose employee 1 to be promoted.