Organizational Network Analysis Exercise 1 and 2

The dataset for the exercise is on the Excel spreadsheet "Data for practice exercises 1 & 2" and consists of four worksheets (Comp2 Info, Comp2 Aware, Comp2 attrib, attribute coding). We asked 77 people who were part of a global technology research group to answer two questions about their network and some individual attribute questions.

Question 1: Please indicate the extent to which the people listed below provide you with information you use to accomplish your work.
> 0 = I Do Not Know This Person/I Have Never Met this Person
> 1 = Very Infrequently
> 2 = Infrequently
> 3 = Somewhat Infrequently
> 4 = Somewhat Frequently
> 5 = Frequently
> 6 = Very Frequently

Question 2: I understand this person's knowledge and skills.
> 0 = I Do Not Know This Person/I Have Never Met this Person
> 1 = Strongly Disagree
> 2 = Disagree
> 3 = Somewhat Disagree
> 4 = Somewhat Agree
> 5 = Agree
> 6 = Strongly Agree

This global technology research group had recently been brought together as a result of an organizational change initiative. The Global Departmental Manager was aware that many of the people in this new group had never worked together and he asked you to conduct an organizational network analysis so that they can better understand the extent of knowledge sharing within the group.

It is your job to analyze the data and come up with 4-6 important points about how this group is operating. Create a short PowerPoint presentation which includes network pictures that illustrate your key findings.

Connected
Commons

Exercise 1: Visual analyses using Netdraw

- Create a new folder in Ucinet.
- Cut and paste the two networks and the attribute data into Ucinet.

Q1. Create network diagrams for the information and the aware networks. Look at the networks at different cut off points (e.g., somewhat frequently and above or very frequently).

- From a visual perspective is the information or the aware network more connected?
- From a visual perspective who are the central and peripheral people in each network? Do they differ?

Create 2-3 PowerPoint slides of different network pictures. On each slide put two pictures (one for the information network and one for the aware network). Add a few words about what you see in the network diagrams.

Q2. Using your attribute data, see if you can determine which attributes seem to matter most in the information network (use the cut-off level of frequently and above). Here you are looking for: 1) characteristics people that cluster amongst themselves more than with the rest of the network and 2) characteristics of people that might be overly central or overly peripheral in the network.

- Differentiate between different sub-groups using the node color option.
  - Use the node shape or node size option to add a second attribute to the picture.

Create 2-3 PowerPoint slides of different network pictures. Add a few words about what you see in the network diagrams.

Q3. Examine what would happen to your information network if you remove various individuals or classes of people (use the cut-off level of frequently and above).

- Remove six central people (you can use the centrality analysis option to find who is most central)
- Remove six people who are spanning organizational boundaries
- Remove the department managers

Create 2-3 PowerPoint slides of different network pictures. Add a few words about what you see in the pictures.

Exercise 2: Quantitative analysis using Ucinet

- **Dichotomize** each of the networks at an appropriate level (for example GE5).

Q1. Calculate aggregate network measures for the two networks. These measures will provide you with an overall sense of network connectivity and include: 1) density; 2) average distance

> **Record these figures in a word document. Which network is the most connected?**

Q2. Calculate individual network centrality measures for the relationships you are interested in. These measures will provide you with an overall sense of people's prominence and relative importance to the functioning of the network.

- Measures you can look at include: In and out degree centrality, Betweenness centrality, Closeness centrality

> **Copy and paste your results into excel next to the attribute file. Make sure the names match. Create a table that indicates the top ten people for each of the measures. Do the rankings differ between the networks? If so, why do you think this is?**

Q3. Show one scatterplot of in-degree and out degree measures within one of the networks (e.g., scatterplot of in-degree and out-degree in the information network).

> **What does this tell you about the different roles that people are playing in the network?**

Q4. Run the blocking function (method = sum) using the location attribute (col 1) to see the connectivity within and between groups in each network.

> **Does the extent to which there is cross-location connectivity differ in the two networks? What might this mean for the organization?**

Q5. Run the broker metrics for the information network.

> **Copy and paste your results into excel next to the attribute file. Make sure the names match. Create a table that indicates the top ten people for each of the measures. What might this mean for the organization?**

Q6. In Netdraw delete the top 4 central people in the information network (based upon in-degree). Save the data as a .vna file. Import the new file into Ucinet and then dichotomize it.

- Run density, distance, and degree centrality.

> **Have the numbers changed? What is the % difference in the density score? Who is now more central?**