KNOWLEDGE MANAGEMENT AND INFORMATION FLOW THROUGH SOCIAL NETWORKS ANALYSIS IN CHILEAN ARCHITECTURE FIRMS

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1 Background and Identification of Problem /Knowledge Gap

Currently, in the Architecture, Engineering and Construction (AEC) industry, information flow and knowledge management influence how companies organize, operate and produce. A social network analysis (SNA) can be used as an effective diagnostic tool so as to highlight a hidden flow of another type of important information (Alarcón et al. 2013). According to Castillo et al. (2016), there is a relationship between key performance indicators (KPIs) and the metrics obtained by SNA in construction projects where the Last Planner System lean tools are applied. Therefore, it would be interesting to corroborate if these correlations are present in architecture firms, since the design phase is where the greatest impact can be made on an overall construction project. SNA can be used to detect patterns such as bottlenecks between teams, areas, groups and information sources, as well as identify disconnected areas or teams. We can better understand the organizational networks, observing connections between nodes and their collaborations, as well visualizing the characteristic patterns of networks such as groupings, and people's proximity or distance (Alarcón et al. 2013).

The ownership and administration of an architecture firm have been noted as critical organizational variables in the determination of the results of a professional service company. It is known that company size is a relevant factor which influences the organizational structures that are adopted by architecture firms (Oluwatayo and Amole 2014). Information flow is a critical activity in architecture firms due to the type of work they do; hence, that is why it is necessary to study how the flow of information and knowledge management occurs, since it is often not visible at first glance (Alarcón et al. 2013).

2 Research Aim and Methodology

The overall objective is to create benchmarking among architecture firms, correlating the organizations' management practices, SNAs and KPIs. The goal of this article is to evaluate and analyse the social structure of architecture firms to determine how information is handled and knowledge management occurs in each of these offices, and then to compare them and to detect patterns. This article is based on quantitative research with a clearly defined structure. It begins with a review of the literature to understand the initial state. Then the methodology used for the data gathering is described. This is then followed by the results and discussion, and finally the conclusions and a few guidelines for action.

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For this study, we worked with the employees of nine architecture firms belonging to the AOA. Information was gathered regarding SNA, management practices and KPIs for these organizations.

Step 1: The questions were developed and validated by experts; the questions were adapted to the organizational model being studied; Step 2: Interviews were done with each office, using a virtual platform; Step 3: Data in Excel was exported to the free Gephi software, version 0.9.1; Step 4: The results were examined to determine connections or bottlenecks between teams and areas, organizational groups, as well as disconnected areas or groups and/or those that are too connected and act as a reference for organizational information; Step 5: Individual interviews were conducted with each office to understand the context of the data obtained.

3 Research Findings

Consistent with the research done by Alarcón et al. (2013) and Flores et al. (2014), the higher density network -connections obtained among possible connections in the network- was the overall interaction network. We were observed that the density diminished as the number of nodes increased. Also, density was directly related to the size of the offices–nodes; the larger the office, the less interconnected it was. We could also observe that when there were more nodes, the median length of the path–average steps necessary to connect all the nodes in the network to each other– was longer (Figure 1).

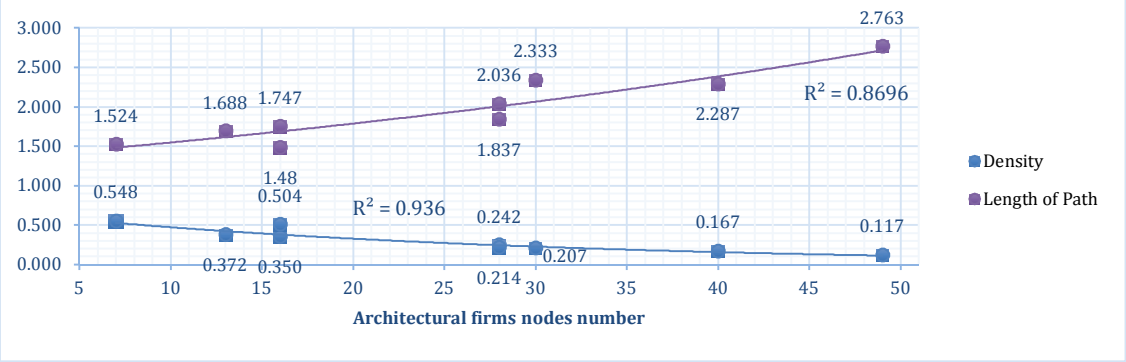

Figure 1: Relationship between the number of nodes, density and the median length of path

Finally, we observed that the density percentage of the frequent work information network is directly related to the number of work groups that the offices indicated that they had at the time the snapshot was taken (Figure 2).

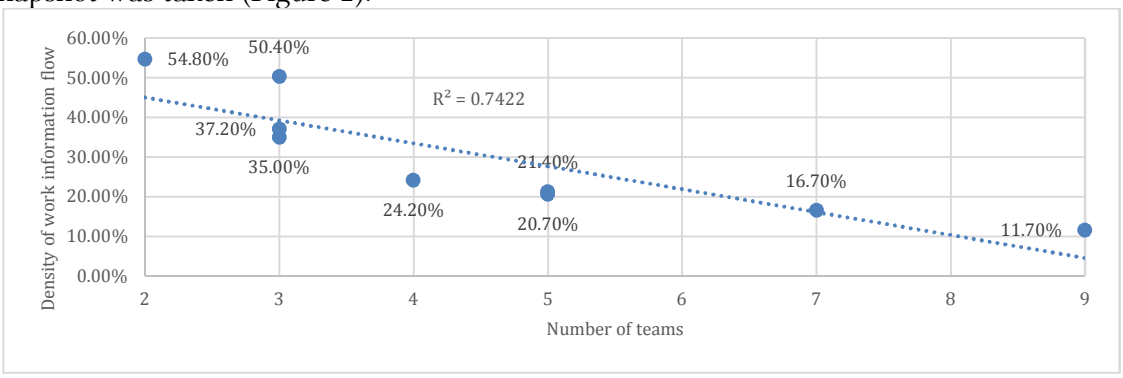

Figure 2: Relationship between the density of the frequent information network and the number of work teams in each office.