

A Scientific Network Analysis of Business Organizations: Research Design and Practices

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Abstract

The overall aim of this paper is to highlight the importance of taking the organizational factors and needs into account during the preparation of research design through the example of the EVILTONGUE project conducted by Hungarian Academy of Sciences Centre for Social Sciences “Lendület” Research Center for Educational and Network Studies (RECENS). The research project focusing on gossip, cooperation and reputation networks necessitated close cooperation with organizations from the business world that has its apparent challenges for an academic research program. Besides presenting the theoretical background and detailing the preparations and execution of our research project, considerations of survey preparation, the process of getting in contact with organizations, and also ethical and technical suggestions for research programs focusing on business organizations are also included in this paper.

Keywords: organizational social network analysis, workplace gossip, job satisfaction, organizational commitment.

Introduction

The paper outlines the challenges of conducting scientific research of business organizations using the example of a research project. Organizational researchers face a wide range of theoretical and practical problems that are even more pronounced for research programs focusing on business organizations. Studying the aspects of organizational life requires access to organizational resources and this necessitates close cooperation with companies that consider the participation in such a research a business investment.

Our team conducts a research project entitled EVILTONGUE focusing on gossip, cooperation and reputation at the workplace. Social network analysis is used to uncover these mechanisms and a pronounced attention is given to controlling a range of organizational factors. Since the respondents of the survey are employees of business organizations, close cooperation with companies mainly from knowledge-

intensive sectors is a crucial part of the project. The process of contacting the organizations, learning their organizational problems as well as their needs through interviews with the managers was also part of the research besides the data collection and data analysis. The research team is part of Hungarian Academy of Sciences “Lendület” Research Center for Educational and Network Studies (RECENS). This project has received funding from the European Research Council (ERC) under the European Union’s Horizon 2020 research and innovation programme (grant agreement No ERC/648693).



Graph 1. The logo of the European Union and the European Research Council

The practical challenges of our organizational research can be summarized in the following key points. Firstly, the potential partner organizations need to be approached and the cooperative partnership has to be maintained. Secondly, the conflict between business logic and scientific approach must be resolved. During this step, the details of cooperation are discussed with the company management, resulting in a compromise solution that fulfills the goals of both the scientific research, both the partner organization. Although additional questions may be added into the survey, the core questionnaire’s consistency is preserved and the ethical considerations of a scientific study are taken into account. Thirdly, an analysis of the collected data has to be provided to the partner company in exchange for the access to organizational information. After outlining the theoretical background and survey methodology applied during the research project, our paper will follow a structure determined by these main points.

Theoretical background

The current chapter gives a short summary of the theoretical framework applied during the research project entitled EVILTONGUE. The first subchapter will separate the three main directions of gossip research and the second part will give a glimpse into how gossip and cooperation is examined in management studies.

Main research directions of gossip research

Gossip and cooperation are phenomena that occur inside close social communities. Gossip is a way to punish free-riders and violators of the group norms in order to enhance cooperation. The personal interests of the sender of the gossip may be served by gossip by maximizing his well-being. Still, gossip, similarly to cooperation, remains a community action. According to the definition of Kurland and Pelled (2000), gossip is an “informal and evaluative talk in an organization, usually among no more than a few individuals, about another member of that organization who is not present” (Kurland and Pelled, 2000, p. 429). There is therefore a strong indication that the phenomenon of gossip and cooperation ought to be examined in a triadic setting. All the research directions are established on a triadic level.

A triad consists of a sender (S) whose strategic behavior we attempt to analyze. He/she is usually the gossiper and the one who can make the decision to cooperate with others. The receiver (R) receives gossip or the cooperative intent. The target (T) is the 'third' person, who is usually the object of the gossip. A triad consists of a sender, a receiver and a target. The existing relationships and dynamics are an integral part of this triadic setting.

The first research direction of the research project is the examination of the target's reputation and its effect on the gossiping and cooperative behavior of the senders (Ellwardt, Labianca and Wittek, 2012; Hess and Hagen, 2006). The question whether a target's high or low reputation enhances gossiping about him remains largely unanswered in the scientific literature. The project seeks to answer the question that under what conditions does the (perceived) high or low reputation of a target indicate to the sender to cooperate with him or to gossip about him with the receiver.

Following the footsteps of the scientific literature (Ellwardt, Wittek and Wielers, 2012; Wittek, Hangyi, Van Duijn and Carrol, 2000; Wittek and Wielers, 1998) the second research direction tries to uncover whether cooperative relationship between the sender and the target and gossip between the sender and the receiver are mutually exclusive or not.

The third research direction considers targets' perceived higher wage as an explanatory variable for the sender's gossiping or cooperative behavior. This direction involves equity and envy theories (Adams, 1965; Bedeian, 1995; Dogan and Vecchio, 2001). The chosen strategy might be affected by organizational factors (Leete, 2000; Welsch and Kühling, 2015). In the project, we consider wage dispersion as a factor that has an effect on the sender's behavior toward the target.

Gossip and cooperation in management studies

Cooperation is a highly important topic in management studies and it is often linked to the concept of performance (Smith, Carroll and Ashford, 1995). It is affected by factors such as task interdependence. High task interdependence requires cooperation more than low task interdependence. Task interdependence has been shown to increase communication as well as the norms of cooperation and the expectation for help (Bachrach, Powell, Bendoly and Richey, 2006).

In management studies, workplace gossip did not receive much attention until recently (Michelson and SuchitraMouly, 2004; Noon and Delbridge, 1993). There is however a tradition of studying informal communication in the formal organizational framework (Mark, Waddington and Fletcher, 2005; Roberts and O'REILLY, 1978). In contrast, informal communication channels emerge spontaneously and the phenomenon is often referred to as grapevine. Gossip is an integral part of the informal communication in an organization (Michelson and SuchitraMouly, 2004). When formal ties are accompanied by informal ones, a potential outcome is that the cooperativeness and productiveness will be likely increased (Mehra, Dixon, Brass and Robertson, 2006).

In the current management literature, gossip is mostly seen as useless and something that undermines productivity, is immoral and also hurts cooperation. This assumption is based on the simple belief that more gossiping more leads to less working activity and there are costs associated with fighting gossip (Gholipour, Fakheri Kozekanan and Zehtabi, 2011; Johnson and Indvik, 2003; Michelson and Suchitra Mouly, 2004). Some researchers attribute similarly beneficial functions to informational communication as to organizational gossip. It can have a stress-reducing function, it can create a shared organizational culture, and enhance cohesion within a group. At the same time, larger grapevine activity is associated with greater voluntary turnover, higher level of stress and also insecurity. As an overall conclusion, grapevine in an organization should not be restricted, but controlled by clear, proactive communication (Crampton, Hodge and Mishra, 1998; Kraut, Fish, Root and Chalfonte, 1990).

Workplace gossip, cooperation and reputation are interrelated with many other factors that need to be measured simultaneously. An organizational structure may encourage either cooperation or gossip. Both ways have potential advantages as well as disadvantages (Beersma et al., 2003; Drago and Turnbull, 1991). Employees' behavior is embedded in and also influenced by interpersonal relations and factors contributing to job satisfaction, the context of behavior, and the overall work mood (Brief and Weiss, 2002) (Johns, 2006). Financial incentives can also determine

employees' behavior. Wage negotiations (Leibbrandt and List, 2014; Seidel, Polzer and Stewart, 2000) and reward allocation (Dyer, Schwab and Theriault, 1976) are important focal points of this research project.

Measuring workplace gossip

The EVILTONGUE project is a survey research, where most of the survey questions are extracted from the relevant scientific literature and aimed to measure gossip, cooperation and reputation within an organization. Beside the theoretical considerations concerning gossip, we included questions regarding organizational dynamics such as wage satisfaction, perceived wage differences and envy. Surveying in business organizations requires the researcher to apply classical management questions such as organizational commitment or job satisfaction. Although the latest two are important control variables in our research, they represent a significant part in the report made for each and every organization. The research project uses international standards to measure such indices. We measure numerous levels of satisfaction such as satisfaction with the managers or with the promotion opportunities. We also controlled for wage, position, past and future promotions, or the period of time spent in the given position of the employee.

The concept of gossip has a strong negative connotation and implies social desirability from the side of the respondents. Most of the relevant researches therefore avoid the usage of the word gossip and we have also chosen to exclude it. Using the widely accepted definition of organizational gossip (Kurland and Pelled, 2000), we asked respondents whether they share evaluative information with colleagues about a third colleague who is not present.

For other the theoretical concepts we applied multiple measures. Market companies doing network research within business organizations usually have 4–6 questions in total, but we wanted to make sure that we capture as many aspects of the dynamics between employees as possible. We measured obligatory cooperation within a company as well as informal cooperation. In our framework, trust is measured as a precondition of cooperation. We included questions that aim to uncover formal and informal communication such as the frequency of contact between employees. In the case of reputation, we asked for the opinions of the employees on each other's work, competence, personality traits and so on. We also attempted to measure friendships and opinion leaders. Different wage perceptions and envy toward other colleagues is also an integral part of the questionnaire. The question avoids the usage of the word "envy".

We attempted to apply questions that are generalizable for every type of organization. We offered every organization to include their own questions in the survey that usually concern different policies or facilities of the individual companies. Editing the questionnaire proved to be an iterative process. Some questions recommended by companies made into our main survey since they have proven to be highly useful questions that did not receive a strong emphasis in the relevant literature.

Establishing partnership with business organizations

This part will discuss the first main point of the practical problems experienced during our organizational research project. Approaching and reaching a mutual understanding with potential partner companies causes some difficulty to a scientific study. We will outline our experiences, the issues that we encountered, and provide a glimpse into our solutions.

Our partner organizations were recruited using mainly the acquaintance network of members of the research team. We contacted these companies via e-mail with an introductory document attached. The document gave a short summary of the research project, stated its goals and detailed the benefits that our partners can gain by participating in our research project. If the particular organization showed interest, we scheduled an in-person meeting with the management of the company. In many cases, the organizations were reluctant to cooperate with us. The reasons for refusing to participate in the project were diverse. For example, most organizations did not include the possibility of this kind of research during the planning of their organizational lives and others were concerned that employees would raise objections to participating in the research.

During the first discussion with our potential partner companies, the following typical questions arose:

1. What does our project profit from the research?
2. What will the organization profit from the research?
3. When will they get a summary of the analysis?
4. Will the name of the participating company be mentioned explicitly?
5. Why are the names of the individual employees not mentioned in the results of the network analysis?

These questions give a good summary of the logic business organizations followed while evaluating the possibility of participating in our research project. The question of profitability was central during the discussions and we were required to prove to these companies that a partnership would be beneficial to them.

The leaders of our partners have mostly already heard of market companies that specialize in social network analysis for business organizations. These market solutions ask the employees to fill out a survey consisting of only a few questions, therefore only several minutes are needed to finish the questionnaire. The participating companies receive the results of the analysis in several business days and the provided material makes it possible to identify the individual employees. In contrast however, our research project asks the partner organizations to devote considerable amount of their employees' time (approx. 30–40 minutes) to fill a sizable questionnaire, a number of ethical considerations have to be taken into account during the presentation of the analytic results (making it impossible to identify the particular employees for example), and the results take approx. 1–2 months to prepare. We, therefore, had to emphasize the benefits of a scientific approach during the initial talks. Our argument was that our perspective has the potential to give a detailed explanation to workplace phenomena, the obtained results can be integrated into the company's strategy, and our services are free of charge since the EVILTONGUE project is a non-profit research program.

The contacted organizations also expressed concern over the usage of their names in scientific publications fearing that bringing light to their organizational weaknesses publicly may give them a negative reputation. We had to assure them that the name of the company will be kept a secret and only the sector in which they operate is relevant to our research.

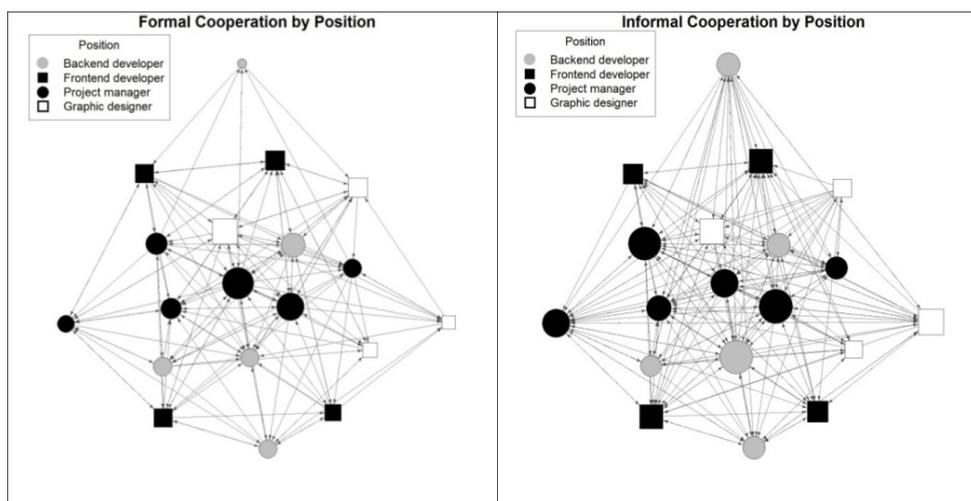
Ethical considerations

A scientific research project has to abide by numerous ethical responsibilities: we have to protect the interests of companies and their employees by guaranteeing anonymity. The names of the participating organizations are not mentioned in any publication and the database of the online survey software stores anonymized codes for each employee. The reasons to guarantee the anonymity of employees are usually not clear to company leaders: they would like to know exactly which person is in which network position. This matter has to be therefore very carefully explained to and discussed with the management of each organization.

Besides the anonymity of data, there are some sensitive data (for example wages) that can be again at the base of different interests. We are interested in how well employees with varying wage levels are integrated into the network structure, but the partner organizations would like to protect information about wages. The workaround solution can be wages given in intervals. Performance wages resulting in significant changes in payments from one month to another necessitated special

considerations. In these cases, alternative measures (such as number of clients handled by a particular employee) were used as proxies of wage levels.

Data analysis in this research project has two purposes: a short report has to be provided to the participating organizations and a separate scientific analysis needs to answer the scientific questions that were formalized by our researchers. These two “outputs” have absolutely no intersections: only the explorative data analysis is presented in the first case, and a deeper, comparative data analysis focusing on casual relationships is necessary during the scientific phase. In the first case, the research project had to take serious ethical considerations into account: even though we gathered detailed information during the data collection phase, the anonymity of employees made the identification and communication of problematic spots to company managers a challenge. Our solution was to aggregate data by position level or department, and research results were presented using sociograms where nodes were colored by job position, organizational commitment, or job satisfaction. This way, anonymous data proved to be useful for organizational purposes: we were able to make conclusions about the satisfaction of employees in certain positions, or the network positions (such as centrality or betweenness) of employees with low levels of organizational commitment could be analyzed. We also identified the characteristics of central actors within a network and inferred potential problems implied by the network structure. The graphs below show the differences between formal and informal communication in an IT-profile organization colored by job positions.



Graph 2: Differences between formal and informal communication in an IT-profile organization colored by job positions

Source: authors' work

Technical considerations

The complex questionnaire necessitated the usage of unique and innovative ways of data collection. After examining the popular online survey softwares and understanding their strengths as well as their limitations, we decided to develop a custom-made online survey.

As discussed earlier, the research project put a strong emphasis on dyadic and triadic relationships among the employees of the individual companies. The collection of network data has its apparent challenges for a survey research: the respondents have to choose from a list of their peers and the choices made earlier affect the possible options of later questions. For example, the employees had to identify the people with whom they engage in gossip. Since the gossip involves an arbitrary number of targets, the respondents were also asked to tell us the people about whom they gossip. Since the identity of the receiver is crucial, the range of targets had to be asked for each receiver. The name of the respondent had to be excluded from the list of potential gossip receivers and the respondent and each receiver had to be removed from the list of potential targets.

The high level of dependency among the different questions urged us to rely on a custom survey software. This software was developed by us in Python and the „low-level” nature of the solution made supervision and customization possible. From the respondents’ side, an online survey research has to fulfill multiple requirements: the process of finishing the questionnaire has to be as quick and simple as possible, the design has to be good, and the survey should be able to accommodate a wide range of devices (including mobile phones or tablets). From the researcher’s perspective, the survey software needs to handle a large number of respondents simultaneously, the respondents have to be monitored in order to prevent unauthorized access or ignoring required questions, and the gathered data has to be stored in a consistent and anonymous way. Our solution proved to be able to fulfill all of these requirements and the resulting database was almost instantly ready to be analyzed, circumventing the need for the long and costly process of data cleaning.

The survey was conducted mainly on tablets provided by “Lendület” RECENS for the purposes of the research project, but non-present employees had the option to fill out the questionnaire in a later date from their own devices and internet browsers. The survey software is running on a web server created by a cloud provider and the questionnaire was accessible through a hyperlink. Cloud solutions such as Heroku or Amazon Web Services Elastic Compute Cloud (AWS EC2) provide low-cost or even free resources for a custom web application such as servers or relational

databases. Cloud resources can be easily created and destroyed on-demand, therefore the costly installation and maintenance of an on-premises computer can be avoided.

Conclusions

This paper contrasts the theoretical considerations and research design of an organizational survey research with its real-life application. Our research team conducts a study focusing on social network analysis at the Hungarian Academy of Science “Lendület” Research Center for Educational and Network Studies (RECENS) group entitled EVILTONGUE funded by European Research Council.

The project seeks answers for the way gossip affects reputation, cooperation and social order in a workplace and how it interacts with other organizational factors. The theoretical framework of the project implies network analysis between employees, measuring cooperation, reputation and gossip triads besides many other relational data, controlling for demographical variables and considering several factors from management literature such as organizational commitment, job satisfaction or wage of the employees.

Since the respondents of the survey are individual employees of business organizations, close cooperation with companies (mainly from knowledge-intensive sectors) was a crucial part of the project. Although we are interested in providing scientific explanations for the phenomena, the different business organizations (our partners) follow their own logic and try to fulfill their own goals through our research. The partner organizations have their own motivations that often conflict with the scientific nature of the project. Data collection was preceded by approaching the potential partner organizations and reaching an agreement with their management. During the negotiations, the details of the survey are discussed in depth and several organization-specific questions are added to the main questionnaire, while preserving its consistency. There were some apparent parallels with organizational network analysis provided by private companies, but the considerable differences had to be clearly explained to the management of the partner companies. The research project had to abide by serious ethical considerations: the detailed information gathered during the data collection phase contains sensitive data, therefore the anonymity of the respondents and the analysis of aggregated data is necessary. We also made the commitment not to mention the names of the participating companies in any publications. The short report given to the participating companies presented data aggregated by job position, organizational commitment, and job satisfaction. The characteristics of central actors within a network were also examined and problematic spots were communicated to the partner organizations.

The research project's complex survey necessitated innovative ways of data collection. A custom online survey software was developed to accommodate network (especially triadic gossip network) questions, ensure full supervision, simplify modification, and to follow our serious ethical rules.

Bibliography

- Adams, J. S., 1965, Inequity in social exchange, *Advances in experimental social psychology*, 2, 267–299;
- Bachrach, D.G., Powell, B.C., Bendoly, E., Richey, R.G., 2006, Organizational citizenship behavior and performance evaluations: exploring the impact of task interdependence, *Journal of Applied Psychology*, 91(1), 193;
- Bedeian, A.G., 1995, Workplace envy, *Organizational Dynamics*, 23(4), 49–56;
- Beersma, B., Hollenbeck, J.R., Humphrey, S.E., Moon, H., Conlon, D.E., Ilgen, D.R., 2003, Cooperation, competition, and team performance: Toward a contingency approach, *Academy of Management Journal*, 46(5), 572–590;
- Brief, A.P., Weiss, H.M., 2002, Organizational behavior: Affect in the workplace, *Annual review of psychology*, 53(1), 279–307;
- Crampton, S.M., Hodge, J.W., Mishra, J.M., 1998, The informal communication network: Factors influencing grapevine activity, *Public Personnel Management*, 27(4), 569;
- Dogan, K., Vecchio, R.P., 2001, Managing envy and jealousy in the workplace, *Compensation & Benefits Review*, 33(2), 57–64;
- Drago, R., Turnbull, G.K., 1991, Competition and cooperation in the workplace, *Journal of Economic Behavior & Organization* 15(3), 347–364;
- Dyer, L., Schwab, D.P., Theriault, R.D., 1976. Managerial perceptions regarding salary increase criteria, *Personnel Psychology*, 29(2), 233–242;
- Ellwardt, L., Labianca, G.J., Wittek, R., 2012, Who are the objects of positive and negative gossip at work?: A social network perspective on workplace gossip. *Social Networks*, 34(2), 193–205;
- Ellwardt, L., Wittek, R., Wielers, R., 2012, Talking about the boss: Effects of generalized and interpersonal trust on workplace gossip, *Group & organization management*, 1059601112450607;
- Gholipour, A., Fakheri Kozekanan, S., Zehtabi, M., 2011, Utilizing gossip as a strategy to construct organizational reality, *Business Strategy Series*, 12(2), 56–62;
- Hess, N.H., Hagen, E.H., 2006, Psychological adaptations for assessing gossip veracity, *Human Nature*, 17(3), 337–354;
- Johns, G., 2006, The essential impact of context on organizational behavior, *Academy of Management Review*, 31(2), 386–408;
- Johnson, P.R., Indvik, J. 2003, The virtual water cooler: gossip as constructive/destructive communication in the workplace, *Paper presented at the Allied Academies International Conference*, Academy of Organizational Culture, Communications and Conflict, Proceedings;
- Kraut, R.E., Fish, R.S., Root, R.W., Chalfonte, B.L., 1990. Informal communication in organizations: Form, function, and technology. *Paper presented at the Human reactions to technology: Claremont symposium on applied social psychology*;

- Kurland, N.B., Pelled, L.H., 2000, Passing the word: Toward a model of gossip and power in the workplace, *Academy of Management Review*, 25(2), 428–438;
- Leete, L., 2000, Wage equity and employee motivation in nonprofit and for-profit organizations, *Journal of Economic Behavior & Organization*, 43(4), 423–446;
- Leibbrandt, A., List, J.A., 2014, *Do women avoid salary negotiations? Evidence from a large-scale natural field experiment*. Management Science;
- Mark, A., Waddington, K., Fletcher, C., 2005, Gossip and emotion in nursing and health-care organizations, *Journal of health organization and management*, 19(4/5), 378–394;
- Mehra, A., Dixon, A.L., Brass, D.J., Robertson, B., 2006, The social network ties of group leaders: Implications for group performance and leader reputation, *Organization science*, 17(1), 64–79;
- Michelson, G., Suchitra Mouly, V., 2004, Do loose lips sink ships? The meaning, antecedents and consequences of rumour and gossip in organisations, *Corporate Communications: An International Journal*, 9(3), 189–201;
- Noon, M., Delbridge, R., 1993, News from behind my hand: Gossip in organizations, *Organization Studies*, 14(1), 23–36;
- Roberts, K.H., O'Reilly, C.A., 1978, Organizations as communication structures: An empirical approach I. *Human Communication Research*, 4(4), 283–293;
- Seidel, M.-D.L., Polzer, J.T., Stewart, K. J., 2000, Friends in high places: The effects of social networks on discrimination in salary negotiations, *Administrative Science Quarterly*, 45(1), 1–24;
- Smith, K.G., Carroll, S.J., Ashford, S.J., 1995, Intra- and Interorganizational Cooperation: Toward a Research Agenda, *The Academy of Management Journal*, 38(1), 7–23;
- Welsch, H., Kühling, J., 2015, Income comparison, income formation, and subjective well-being: New evidence on envy versus signaling, *Journal of Behavioral and Experimental Economics*, 59, 21–31;
- Wittek, R., Hangyi, H., Van Duijn, M., Carrol, C., 2000, Social capital, third party gossip, and cooperation in organizations. *The Management of Durable Relations: Theoretical and Empirical Models for Organizations and Households*, 100–101;
- Wittek, R., Wielers, R., 1998, Gossip in organizations, *Computational & Mathematical Organization Theory* 4(2), 189–204.