

Prevention of Employees Fluctuation in IT

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Abstract: *The aim of this paper is to present results of implementation fluctuation preventing counter-measures among other positions in IT department. In 2017 there is still one of the lowest unemployment rates in the history of the Czech Republic (especially in IT) and companies are trying to preserve and prevent their key employees from moving to another employer. One of the tools, which could help reduce this risk, is providing additional education, certification and qualification with laying great emphasis on most valuable and essential personnel. The paper present updated results after 6 months since the company started with selection of high risks employees. It has been found that group of employees with high risk of leaving the company has shrunk and overall fluctuation index has also plunged.*

Key words: Fluctuation, Employee, Human Capital, Job Satisfaction

Long-time existing company can face many problems and risks. From minor ones like bankruptcy of one of many possible suppliers to major one like technological shift in current industry and with this connected decline of quantity of sold product and decreasing of companies' revenue. This paper present-updated result of implementation of set of processes in a company. The goal of these processes is to find employees who could possibly leave the company and motivate them to stay or prolong they contract until replacement is found.

Every IT/ICT system has to be maintained by qualified employees, this could results in a case this key employee leaves the company without proper replacement. This could represent threat to an organization's operations, development of new products or services and innovations of introduced one. Also knowledge, important business contact and information could be lost after an employee leave a company.

European economy is still in good condition World Bank (2017) and growth in advanced economies is expected to accelerate to 1.9 percent in 2017. Unemployment rates are quite low and employers suffer from understaffed professions like programmers, general practitioners, dentists and medical staff in general as well as qualified labour force. In this situation could loss of one or several of key leading employees result in existential problems of a company. Companies must be ready to this inevitable development. Getting to know own employees, is one way how to improve quality of decisions made about these employees.

Research Československá obchodní banka (2016) showed that more that 20% of respondents plan to expand their business in 2017. This means that additional employees will be required and as shown previously the Czech Republic has quite limited supply of qualified unemployed workforce.

Maryska and Sladek (2017) discuss importance of information and performance measurement for management of a company.

Main idea of evaluating employees' position and its importance was introduced in Mesicek and Petrus (2016).

1. Background Research and Solution concept

To be able to map the social network easily sufficient source of data is essential. The work of Kazienko et al. lists main data sources Kazienko Michalski and Palus (2011). There are several cheap and fast sources of information about structure of the social network within the company. Mainly e-mail communication, instant messaging records, information about meetings and phone calls could be used to get brief image about how the social network of the company could look like.

Additional tools could be used to obtain more accurate picture of actual social network structure. Questioners for employees about their contacts and frequency, quality, strength etc. of the contact

could be also used. Connections like meeting at lunch, smoking room or out of work activities could be discovered when a questionnaire is used.

Newer statistical approach how to reconstruct the network when e.g. detailed information (e.g. exact time) is not available in the log files of the tracked events are mentioned in the work of Corallo et al. Some files might not include time range when a given user participated to a given activity. Set of matrix and heuristic methods can use to reason probable structure of the network.

Agent-based simulation could be also used to predict structure of a group. Garcia-Magario et al. showed that it is possible to use CLUS-SOCI (an agent-based and CLUStering tool for simulating SOClograms) to train the program to be able to predict actual structure of groups based on set of training data.

2. Data Description

Data used to validate the research were acquired from different information systems. E-mail network was used as a background, mainly information about who is writing to whom and what is the subject of the message (form: Sender, Receiver or Receivers, Subject). Blind carbon copies were also included. As additional data are used exports from logs of company's instant messaging system and data from attendance at meetings. Company managers selected 15 employees for parallel questionnaire information harvesting. The questionnaire was focussed on work satisfaction, revenue and desired benefits. Last phase consisted of structured interviews with highlighted employees by the initial analysis.

3. Method of research

As mentioned above, set of processes using social network analysis to identify important employees within social network of the company was used from the article Mesicek and Petrus (2016).

These important persons, together with key employees connected with research and development and with unique skills or know-how should be focused, periodically gathered information about their attitude towards the company and current work position.

3.1 Creation of social network map

Figure 1 shows process of social network map creation. For detailed description of the process, see Mesicek and Petrus (2016).

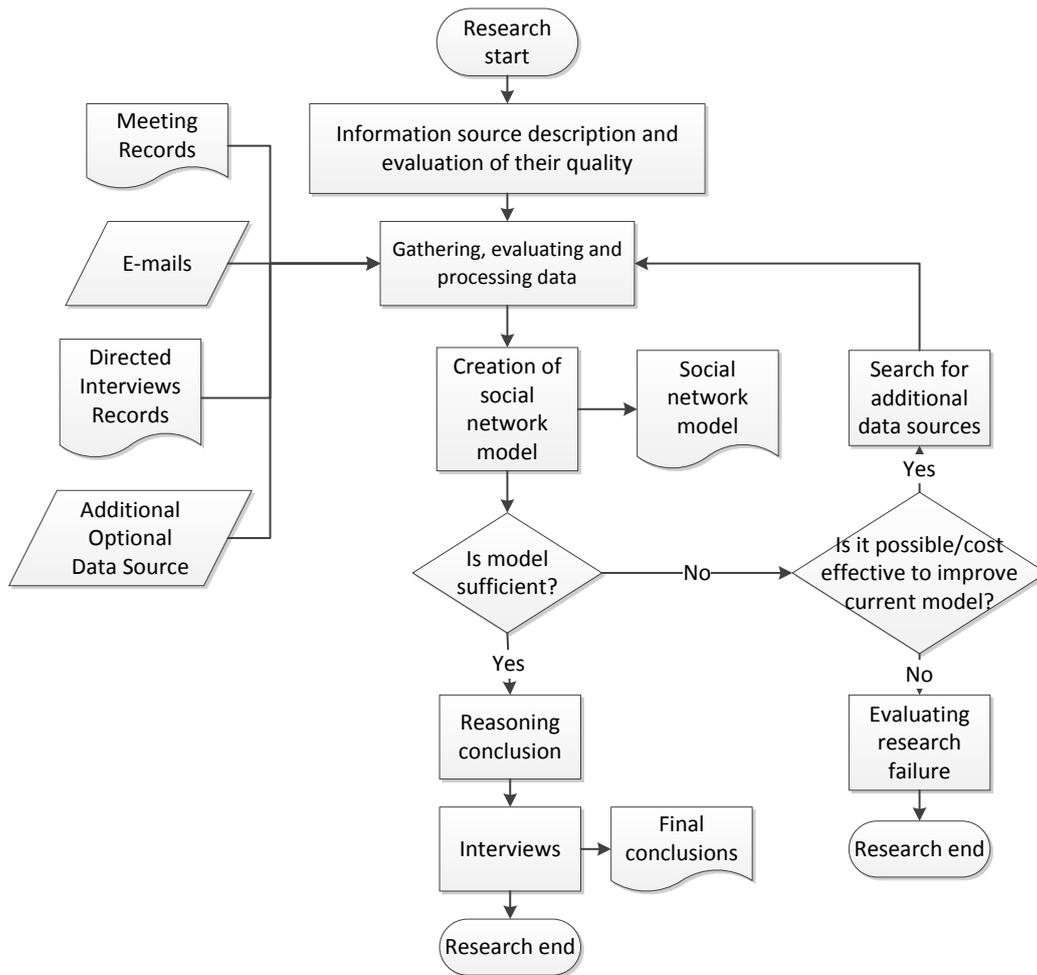


Figure 1 Process of creation of a social network map.

3.2 Evaluation of social network map and additional data sources

Figure 2 shows process of Social network evaluation. The social network map can be used as input for social network analysis methods.

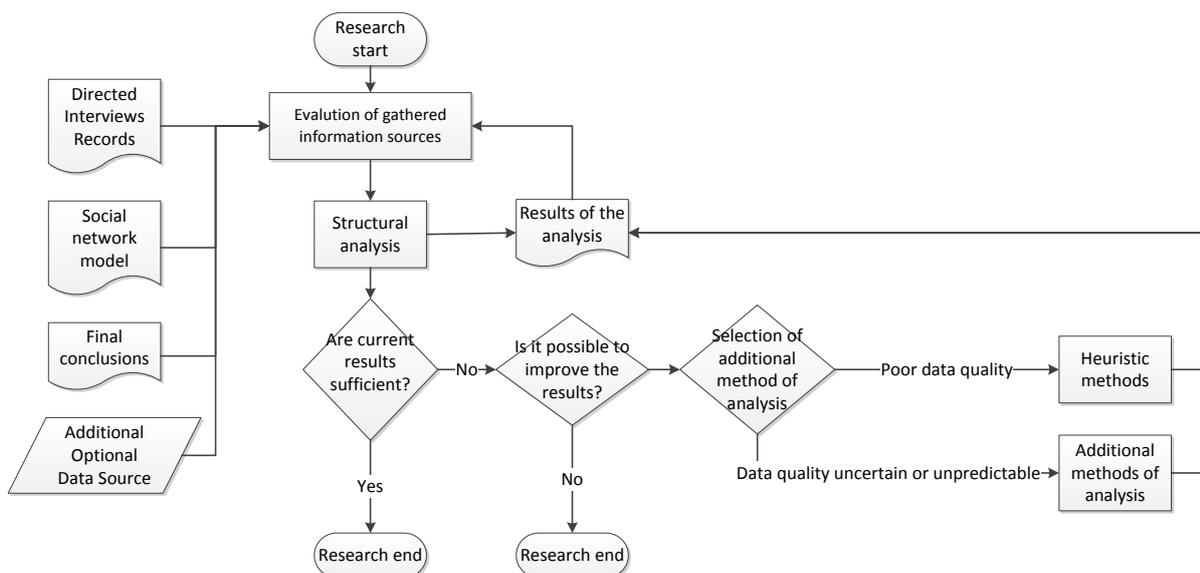


Figure 2 Selection and performance of selected method or methods

3.3 Process of evaluation, group distinction by probable risk of leaving a company

Every included employee should receive value of the stability index from 0 to 1 where employee with low (approximately from 0 to 0.2) is likely ready to leave the company. Employee who score from 0.2 to 0.8 (boarders not included) might leave but he or she will probably need bigger incentive and employee with index near 1 has probably no intentions to accept offer from another employer. Part of equation is weight of each factor (sum of these four weights must be 1).

First part of the index is social network position. Because every companies' social network is unique and due constant changes of environment, major changes over time can occur, we should compare an employee to his or her kind (same work position or same department, etc.). We can calculate social network position of each employee and order them by result of clustering coefficient or different metrics within the network. The group of employees with highest values will score 0.8 to 1.

Second part of the index is internal evaluation of the employee. Based on his or hers evaluation by co-workers and background like education, job history, etc. Again, employees with highest overall score (qualified, with great score from colleagues, etc.) will receive 1. Employees not meeting the criteria will score less. Another factor is that employee who commutes every day for hours is more likely to accept a good job offer near his or hers home than employee living nears his work place. Important part is self-evaluation of the employee, connected with job satisfaction, career options and promotion.

Third part of the index is connected with number and quality of job offerings available for this employee. This evaluation goal is to find out how easy it is for each employee to find another job with same or better position.

Last part of the index is reserved for special and additional points reserved for factors not included in three previous parts of the index like unique skills not included in internal part of the evaluation.

The fluctuation index is possible to calculate as:

$$I_n = A \times Soc + B \times Inter + C \times Out + D \times Special$$

where:

In.....Index of employee' stability

Soc.....Social network position

Inter.....Result of internal evaluation of an employee

Out.....Result of overview of available work positions outside of the company

Special.....Additional points (unique skills, know-how, etc.)

A, B, C, D.....Weight of each factor, sum of weights is 1

4. Demonstration of the Stability Index

Presented index was tested since late 2016 on data from a middle size company operating mainly in Prague and Brno, Czech Republic.

Based on presented processes social network model of employees' interactions was assembled. The model was successfully tested after 10% of randomly chosen employees and two key employees (with highest Eigen vector) within the company were interviewed to confirm conclusions made based on the model. Only minor deviations were discovered (e.g. assumed connection between two employees was stronger than was expected because of recent events).

Second part was calculation of additional relevant metrics of social network and every node. Additional data were linked to every employee (e.g. work position and its description, qualification (level of education, education classification), distance from home address to his or hers work place and duration by car, on bike, public transportation and on foot (in case they live less than 4 km from work place, etc.).

Portal www.jobs.cz and one private head hunting company was used to find number and quality of job offers for every group of employees (from less qualified employees to top managers and data architects of the company). Available LinkedIn profiles of the company employees were also checked for changes and possible signs that the employee is possibly looking for a new job (function of hidden availability for possible employers was intentionally not tested).

Last part of the index (Special) was inserted by direct superior of evaluated employee in first week of December 2016 based on prepared manual (e.g. recent actions of the employee which are not included in the previous reviews).

Last part of the calculations consisted of final check of values for extreme values and possible errors and then the score for every employee was calculated for every part and the final value of the index has been calculated (weights of A, B, C, D were set after discussion of top managers to 0.2, 0.5, 0.2 and 0.1).

Figure 3 shows distribution of the index at the end of 2016.

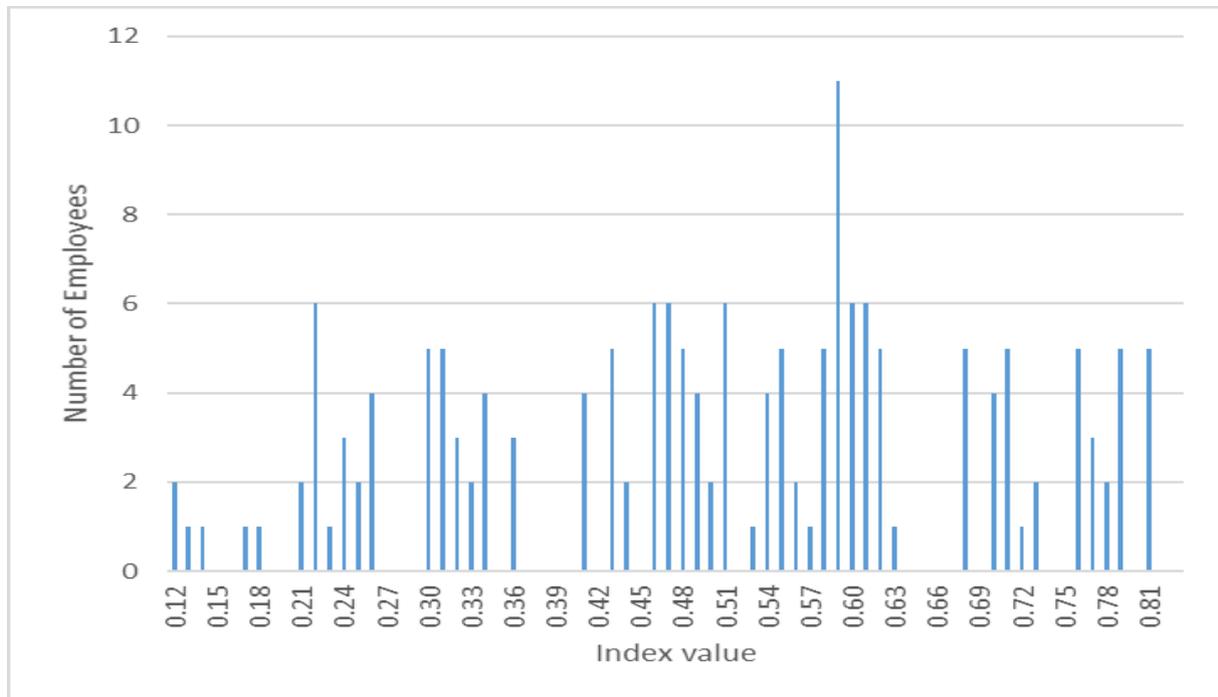


Figure 3 Number of employees by index value at the end of 2016

Several red flags raised and marked 6 employees with score 0.2 and less at the end of the research.

These employees could be or even might be open to accept an offer from another employer and it will be probably difficult to replace them with sufficient replacement in weeks or even months.

One of them commuted 1 hour and 48 minutes every day, had history of changing employers and is at non-crucial position. Hers direct supervisor refused to take any action to prevent her from leaving the company. She left the company in April 2017.

Another discovered employee already left the company before the research results were delivered.

Result showed that rest of the employee were from same crucial department of the company. In case these four employees decide to leave, the company will be in existential troubles because the department will lose two thirds of the employees with specialised skills and knowledge. This information let the managers to update crisis scenarios to reduce possible vulnerability and impact (to find possible supplier in case they need to replace their function) and also prepared a package of incentives to improve the department loyalty.

Figure 4 shows distribution of the index at the end of June 2017.

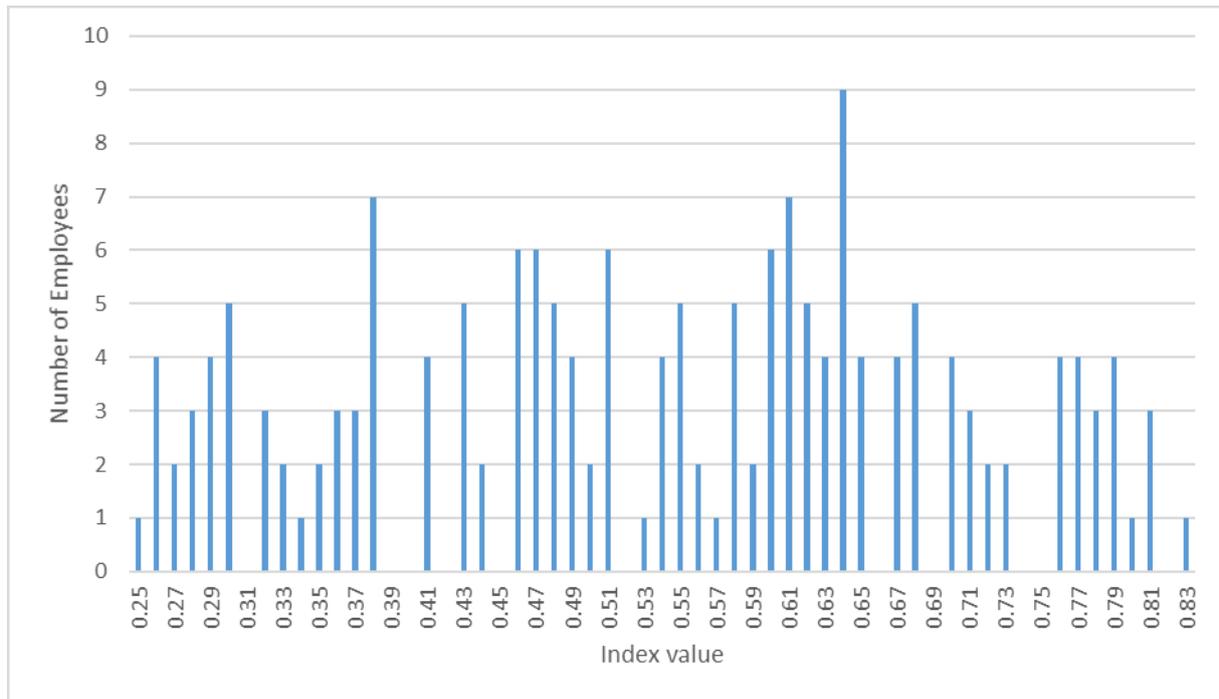


Figure 4 Number of employees by index value at the end of June 2017

Minimum value of the index increased from 0.12 to 0.25.

The rate of fluctuation employees of the IT department has dropped from 11% for first half of 2016 to 8 % for first half of 2017.

5. Discussion

Presented sets of processes and the index helped with discovering which employee could be both important to the company and ready to leave it. In case the company wants to prevent that or postpone this, certification, additional education or other financial and non-financial benefits could be offered as well as partial work from home.

Overall costs of implementation of this process in the company were only 40% of planned resources to facilitate possible fluctuation of employees.

Framework to estimate returns in training of an employee is presented at Mehra et al. They found that an increase in training investments is significantly linked to an increase in revenue per employee. Also, those large firms benefit more from training.

Research by Hansson (2007) showed that the provision of company training is largely determined by firm-specific factors, such as human resource management practices.

Survey of HAYS company at (2016) showed that 69% of employees in Czech Republic are expecting salary increase after they change their employer and 62% further career advancement. From employers point of view 73% of companies is offering language courses and 64% offer further education of their employees (certification, etc.).

On the other hand, there is real risk that new skills could improve value of the employee at job market and there will be stronger pressure from him or her to increase his or her salary and work conditions.

Problem of migration of labour force to Germany and Austria is also one of the concerns of the employers. This risk of loose qualified labour force is probably higher in the border regions. Several larger cities (e.g. Brno, České Budějovice, Plzeň, Liberec or Ústí nad Labem) are within every day or work week commute range with much more interesting work positions, with better work condition and financial perspectives. The employee can get self-confidence to try working abroad after receiving language courses.

Focussing right employees for additional language or specific training could enforce their loyalty to the employer and sign that the employee is important to the company. In addition, the process of learning could bring change of environment for the employee and break the day-to-day routine.

Another possible risk of this process is that unhappy employee could be overlooked and this will trigger his or her process of leaving the company without suitable replacement.

6. Conclusion

Problem of evaluating employees and risk of leaving their company without having proper replacement is quite serious when we consider current situation at the job market in the Czech Republic. Crucial employees must be discovered and the company should offer them several benefits like additional training, benefits or special care and understand why they might want to leave. The prepared set of processes, which should help to evaluate and choose employees with high risk of leaving their current company. Main benefits of selecting employees for direct offers to improve their work satisfaction could enforce loyalty of the employee, improving his or her skills and thru this work performance. Additional benefit of a future trainings could be chance to meet other people from the company and improve social network position within the company.

Main contribution of this article could be seen in results of the applied research in a company. The research started at the end of 2016, identified employees with high risk of leaving the company. Based on those results management of the company took contra-measures like additional packages of benefits for selected employees. The overall fluctuation dropped as well as probable voluntary fluctuation of essential employees. Human resources and how the company is working with them started to be an issue.

Every company must consider this delicate topic with caution. Like every decision in human resources management, this could start chain reaction with massive undesired consequences.

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