Social Network Analysis in Professional e-Recruitment

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Abstract. The present paper considers the importance of social networks for the success of the recruitment process in the knowledge society. It provides a short theoretical background on social network analysis (SNA) and the most common recruitment practices. The paper provides some results from a survey on the social networks usage by Bulgarian recruiters. On bases of the analysis made, a short specification of a tool supporting professional recruitment is provided.

Keywords: social networks, social network analysis, recruitment, human resource management.

1 Introduction

The development of information technologies (IT) in the last few years, and in particular, the appearance of Web 2.0, has resulted in deep changes in work and life. Nowadays, Web 2.0, and social networks in particular, reflect business and social communications of individuals, and become essential tools for transfer of knowledge and information. In the knowledge-based society, where knowledge and skills are acknowledged as an important resource for growth and competitiveness, human resource (HR) management becomes a business process with strategic importance, both for design and implementation of corporate strategy, motivation, recruitment and preserving of highly-skilled personnel. [13].

Nowadays, Web 2.0 changes the selection process of employees, providing many new opportunities. It provides opportunities for relationship-based approaches and proactive recruiters [6]. Social networks, in particular, provide a link between candidates for the position and the recruiters [8]. In addition, in order to facilitate the work of recruiters, tools that facilitate the selection process by taking advantage of the benefits of Web 2.0 have been developed [7].

Taking into account these rapid changes, it is interesting to find out how new technologies and the opportunities associated with them have affected the daily practices of Bulgarian recruiters. Some of the questions this paper tries to highlight include: How they are using social networks? Which social networks do recruiters prefer? What information is relevant to them? Do they apply SNA to find the right candidate? Do they use specialized tools for social networking? The paper initially provides an insight into social network analysis and the recruitment process. Subsequently, it presents the methodology and the results of a study

carried out among Bulgarian recruiters in order to investigate their current recruitment practices and the usage of SNA in this process. On this base, a short specification of an appropriate tool for recruiters in Bulgaria is proposed.

2 Social Networks and Recruitment Processes

The term social network was first coined by Professor J. A. Barnes in the 1950s as "an association of people drawn together by family, work or hobby" [4]. Nowadays, the use of the term in society is highly related social network sites (SNSs) - an IT tool for support of social networks, which provides a communication platform and specific tools for organizing events, knowledge sharing, easy messaging, etc.

In recent years, an increasing penetration of social networks on the web can be noticed [9]. Many studies are devoted on social networks and provide various classifications: according to the functionality they offer (e.g. searching and browsing capabilities [12], privacy protection scale [10] etc.) or the characteristics of consumers who use them (e.g. relationship classification [11]).

A well-known technique for extracting information from SNSs is the social network analysis (SNA) - a structural approach, which studies interaction among social actors [2]. It is based on the assumption that there are patterns in relations and these patterns are based on live individuals' relationships [1]. There are four important features of SNA [2]: (1) it is a structural approach, which studies the structure of the network; (2)it is grounded in systematic empirical data, especially relational, or network data; (3) it draws on graphic imagery; (4) it uses mathematical and computational models. SNA uses many concepts from the graph theory and the network analysis, interpreted from social theory point of view. For example, high degree centrality for a node indicates a high popularity or activity for the actor, which is represented by that node.

Recruitment is a part of human resource management (HRM) which refers to the process of attracting, screening, and selecting qualified people for a particular position. The recruitment process according to Armstrong [5] contains four steps: defining requirements, planning recruitment campaigns, attracting people and selecting people. SNA could bring many benefits in the phase of attracting and selecting people. For example, in the case of subnet of good specialist, a high value of degree centrality of a node means that the person, represented by this node has many connections to the high-level specialists. By communicating with them the individual most probably exchanges knowledge and information, and it might be concluded that he also possesses good expert knowledge and skills. If the subnet represents professional group pages and the edges represent belongings of a person to a page, a high value of degree centrality indicates interests and hobbies of a person. If the definition of edge is changed to 'an edge connects two nodes if the person has published information in the professional group page', the degree centrality would measure competence. Both methods could be extended by associating weights on the edges in order to obtain more precise results. They could be used for comparison of people and could contribute to choosing the right person in the recruitment process. They are based on a common algorithm:

1. Define a subnet, which includes defining nodes, edges, weight of edges, and an interpretation of the edges.
2. Calculate degree centrality.
3. Analyze the value of degree centrality.

The homogeneity of these steps allows defining a module with such functionality. Similar algorithms could be designed for other characteristics from the graph theory.

3   SNSs in Bulgarian Professional Recruitment

An initial survey was conducted with the objective to understand the usage of SNSs in HR practices and to extract the common patterns in the recruitment processes on Bulgarian labor market. The target group includes Bulgarian HR specialists who are involved in recruitment processes. The survey methodology contains a questionnaire and interviews with respondents in order to deepen the understanding on SNSs usage. The questionnaire includes closed and open-ended questions aimed to collect information about the most used SNSs. Generally, the survey aims to answer the following questions: Are recruiters in Bulgaria using SNSs in their practice? Which SNSs they use and how? Are they using SNA for determining competency? What information they gather? Are they using any tool to support their work with SNSs and if so, what they like and dislike in it?

In addition, a method for determining the competency based on SNA was described and the respondents were asked if they use it. A question about the relevance of a SNSs IT tool was asked. In the interviews the recruiters describe step by step their way to analyze the information published in SNSs.

A group of 14 professional recruiters from different organizations were asked to fill the survey form. The recruiters work on Bulgarian labor market. They are selected from different organizations in order to cover the majority of practices used by Bulgarian recruiters. Most respondents recruit mainly IT specialists. They are divided into two subgroups according to the type of recruitment they practice. The first subgroup comprises specialists, who work in HR departments and their main responsibility is to recruit specialists for the whole organization. Therefore, they are called internal recruiters. The specialists of the second group work in recruiting companies (e.g. Adecco Bulgaria Ltd, MiNDS People & Solutions, PFG Bulgaria Ltd, etc.). They are called external recruiters and often are referred to as 'head-hunters' because they attract good professionals and make them change their employer.

The two groups use different methodologies and tools for recruitment (Fig. 1). The main method for attracting new specialist used by internal recruiters is publishing job offers on the website of the company or posting it on specialized sites for job finding (JobTiger, Jobs.bg, etc.). It is a passive way to find the right person, driven by the interests of job seekers, not by the recruiter. They are interested in the candidates' previous experience, previous employer, education, etc. This subgroup of recruiters does not use SNSs for reaching the candidates or for building the complete profile of the candidate. For this purpose latter occasionally Facebook is used.

The recruitment process for external HR specialists is driven by the recruiter and includes searching SNSs for a person with accurate profile, contacting and

attracting him/her. As the survey results show, the external recruiters are turning to social networks for almost every position they are working on. They rely mainly on LinkedIn for evaluating professional skills, followed by Facebook for determining personal characteristics. Other SNSs, like SkillsPages and Xing, are rarely used.
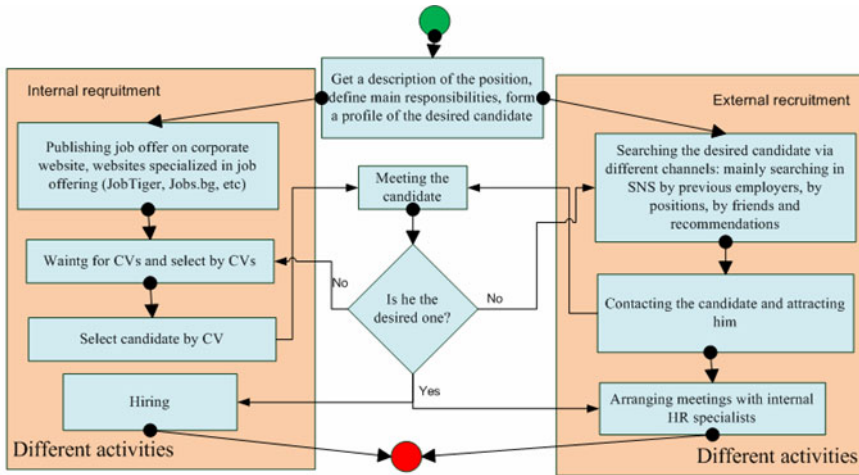

Fig. 1 Processes used by internal and external recruiters

It could be noted that internal recruiters are interested mainly from education and experience, as well as available certificates of the applicants. The external recruiters do not put such high weight on education and certificates, but rather on previous employers, the profession and experience of the applicants. It is interesting to point out that in the evaluation process relatively high value is given to 'Friends, who are good specialists in the area'. This factor is as significant as education and certificates for external recruiters while internal ones find it for less important.

One of the issues find out during the survey is that all of the respondents do not use an IT tool supporting their activities for searching SNSs. They use only build-in functionalities of SNSs, and loose time in searching information. The respondents who were interviewed claimed that they spend over 60% of their time on searching relations in SNSs. Therefore, an SNSs IT tool would be very useful.

4 Conclusion

Although some companies still prefer the traditional job offering sites, many professional recruiters are going beyond them and are entering the SNSs in order to find and attract the most talented candidates for the job. Currently, recruiters are searching the social network manually and their success mainly depends on their intuition. Nowadays, when SNSs are increasingly used in business processes, a tool

for analyzing social networks is not yet available on Bulgarian market. According to the survey, it is obvious that for internal HR specialists such tool is meaningless, however external ones need it. In addition, the application of SNA could facilitate the recruitment process and could lead to more effective work of recruiters. SNA as a structural approach could help recruiters to find complex patterns and derive links between such patterns and individual characteristics of objects in the social network.

A short specification of an adequate IT tool supporting the recruiting activities is defined by listing the minimum needed features. The tool must:

- be integrated with social network sites (at least LinkedIn);
- support information for education, profession, previous experience, current and ex employers and owned certificates;
- support defining relations or use relations from a social network site;
- provide functionality for searching (at least search functionality of LinkedIn);
- provide a mechanism for evaluating people based on relations to other people;
- provide functionality for searching people by their relationship index.

The described survey was made as initial study of the problem of the recruitment methodologies and SNSs usage. It will serve as foundation for deeper research on the ways recruiters operate with social network sites. The need of an IT tool, supporting work with social network sites was identified and it should be analyzed in more details in further studies, which will lead to detailed software specification.

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