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Extending the Architecture for a Next-Generation Holistic E-Recruiting System

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Abstract

In July 2007, In Lee proposed an architecture for a next-generation holistic e-recruiting system. Based on an extensive review of marketing, recruiting and IS literature we propose to extend the framework by adding employer branding as a new important construct and sub process. It is shown how employer branding has to be integrated into the existing architecture to develop and implement an effective employer branding strategy. The results are a first step towards an architecture for a holistic e-HR management system.

Keywords:

E-Recruiting, IT-Architecture, E-HR

1. Motivation

What makes a firm attractive for employees? Many might prefer large companies with strong brand reputations. However, product brand and employer brand are different, and there are substantially more firms looking for employees than most candidates realize. In fact, it is easy to conclude from the literature that a top-notch image is the exclusive province of a selected few (e.g. Keller 2002). Hence, firms have to develop a strategy to promote themselves as an attractive employer. In a competitive labor market, one way for a business to stand out is to develop an employer 'brand' that will attract good candidates. An employer brand is a set of tangible and intangible attributes and qualities that make an organisation distinctive, promise a particular kind of working experience, and appeal to those people who will thrive and perform their best in its culture (Lievens et al. 2007, Know & Freemann 2006). However, as Erickson and Gratton (2007) point out, "companies– even very large ones – don't need to be all things to all people. In fact, they shouldn't try to be." While e-recruiting has substantially matured over the years, particularly the recruiting sub process of employer branding is considered important yet not sufficiently mastered by HR executives. As our review of marketing, recruiting and IS literature implicates there is a need for a structured approach to manage the recruiting process and its support by information systems. In the existing models of the recruiting process a gap can be identified which covers most of the important aspects except employer branding.

The approach of our paper is therefore to extend the architecture of the holistic e-recruiting system introduced by Lee (2007) to structure both the recruiting process and the supporting

information systems. We analyse the need for a structured recruiting process (2.1) and the concept of employer branding as it is discussed by marketing and recruiting literature (2.2). Section 2.3 provides an overview of existing models of the recruiting process and how it can be supported by IS. This section analyzes the need for extending the existing architecture of an e-recruiting system as it was introduced by Lee (2007). In section 3 we discuss an extension by adding the process steps of developing and implementing an employer branding strategy. In section 4 we finally will discuss our research results and present some implication and limitations as well as some aspects for future research.

2. Theoretical Background

This section discusses and presents the findings of our literature review. First the general challenge to hire (IT-) professionals, second the concepts of employer branding and image and third existing models for the recruiting process.

2.1 Hiring IT-Professionals

In 2002 Agarwal and Ferratt forecasted that talent shortage on the IT labor market will cause an enduring problem. The unbalanced proportion between demand and labor supply could be traced back to the 1980s. At this time the Fortune 500 firms in the US often had more than 100 vacancies for IT-specific work profiles. Especially in economically underdeveloped regions of the country it became extremely difficult for companies to recruit qualified IT-workers (Rifkin 1989). The importance of information technology and the appendant workforce increased over the following years due to competition in almost every industry branch and passing of traditional boundaries (Keen 1991). This growing demand for IT services led to a serious shortage of sufficiently qualified IT professionals (King 1997). A reason for the specific shortage of IT talents was mentioned in the high demand of specific technical knowledge and required process management skills for IS people compared to average employees (Gillian 1994). Therefore King stated in 1997 that one of the biggest challenges for the IT- and IT-related industry will be attracting and retaining talent.

In consequence of this upcoming problem a few researchers started to develop human resources strategies for being more effective in IT-professional recruitment. In a first step, strategies were designed to facilitate the definition of the required IT skills for the vacant work profiles as well as the source where potential hires could be come from. Results of a study by Smits et al. (1993) showed that the description of the vacant job profile within the job ads could contain a valuable opportunity to attract highly skilled candidates for a specific company. Agarwal and Farrett (1998) chose a different approach and observed successful companies and their practices in staff recruitment in order to build up taxonomy on IT recruiting practices. Their results showed that successful hires could sometimes be traced back to a company's network. The use of networks to diffuse employer's attraction represented a complete new way to affect staff recruitment. Especially the relationships with universities or further academic institutions implied an effective channel to hire top students directly from college (Agarwal & Farrett 1998). Referrals did not only represent an effective recruiting mechanism in relationships with academic institutions but also for hires through the networks of the company's employees. For example one company within their survey managed to recruit 60% of all hires from internal referrals.

A first step to a defined strategy for recruiting IT-professionals was a taxonomy including the practice categories for IT-staff recruitment. This taxonomy is separated in four divisions; sourcing, skills sought, competitive differentiation elements and one-time inducements. Sourcing describes a source from which a need for IT-professionals is met. A mix of skills sought to identify prospective hires for the IT organization is a further part of the taxonomy. Competitive differentiation elements are the basis upon which an IT corporation demonstrates itself as an attractive place to work during the whole process of IT-staff recruitment. Finally one-time inducements on a limited basis help to attract the respective candidate to the organization. (Agarwal & Ferratt 1998) This framework with four categories is a first step to show what practices companies follow within their staff recruitment.

The general framework with four categories was extended in the following years. Ferratt et al. (1999) observed the importance of recruitment practices for IT professionals by seriousness of shortage problem. The results showed that the important ratings for single recruiting mechanisms differ according to the opinion if recruitment especially talent shortage is a significant problem or not. For example the use of online instruments is regarded as very important for companies who assess IT-staff recruitment as a major problem. A reason for this lies in the opportunity to reach and attract a larger number of applicants beyond the regular catchment area. Moreover the companies should be able to process a larger number of applications compared to traditional methods. In the category of competitive differentiation it is obvious that these companies need to put on extra efforts who regard IT-talent shortage as a serious issue. Another clear result reveals that these companies which are pressed by an overall IT-talent shortage believe that they got to manifest the company's unique strengths, overall reputation, visibility and vision with the objective to attract IT professionals on a long term basis (Ferratt et al. 1999).

A further step for defining a combined IT-HR strategy to recruit IT-professionals is the declaration of five strategic levers. The first of these five levers is located in the recruiting posture, focusing on HR practices essential for influencing the joining behavior of IT-professionals. Also compensation tends to be an effective instrument to attract the candidates to a respective company. The focused examination for productivity and the individual could represent further strategic levers, consisting of HR practices focused on the work of IT professionals, while maintaining their productivity, work arrangements, performance measurement and employability training and development. The fifth lever is career development and security of each respective candidate. This lever represents the direct linkage between of recruiting, attracting and developing candidates (Agarwal & Ferratt 2001).

A necessary condition for successful implemented strategies in IT-staff recruitment is also strongly related to the relationship between IT and HR-department (Schwarzkopf et al. 2004). A case study with 30 senior managers of 15 companies compared these internal relationships. They showed that the IT-departments regarded the related HR departments whether as nuisance, service bureau or valued partner. As a result of this observation Schwarzkopf et al. (2004) specify four main IT-employment approaches. The first strategy dealt with the use of external contractors and consultants to control uncertainty in terms of talent shortage. Furthermore IT departments undoubtedly benefit from better relationships with HR; HR specialists could give valuable support in terms of legal risk, skills tracking, skills assessment, and other trends that can reduce IT staffing uncertainty. Better

information systems provide better forecasting and a closer connection with their organizations' overall business planning process. Finally lateral relationships help to delegate skill development decisions to departments or individuals.

The group of IT-professionals represents a bunch of candidates with a specific behavior in the application process. IT-professionals act in the recruiting process in more or less defined patterns. They use certain channels to seek information about potential employers and job descriptions. The companies need to adjust to these behavioral patterns and attract their candidates in these channels the IT-professionals prefer. The group of IT-professionals tends to look for vacancies published on corporate websites and in internet job boards. Speaking generally for companies the most promising way to attract IT-professionals is the internet (Keim & Weitzel 2006). The following subchapter describes the underlying theories for the development of a long-term candidate attraction. This long-term candidate attraction is also known as employer branding.

2.2 Employer Branding

As we discussed in section 2.1 the labor market especially of IT-Professionals can be characterised as a competitive one. The challenge for the organisations is to differentiate themselves in order to successfully attract and retain talented staff. Our review of marketing, recruiting and IS literature indicates that one possibility to meet this challenge is to communicate an attractive image of the firm to potential employees. Stern et al. (2001) suggest that "image is generally conceived of as the outcome of a transaction whereby signals emitted by a marketing unit are received by a receptor and organized into a mental perception of the sending unit." They cite Ind (1990) to support their definition of an employer image: it "is simply the picture that an audience has of an organisation through the accumulation of all received messages". In addition de Chernatony and Dall'Olmo Riley (1998) conclude that 'brand' is "a multidimensional construct whereby managers augment products or services with values and [which] facilitates the process by which consumers confidently recognise and appreciate those values". For our research we define 'image' and 'brand' as presented here and specify the usage of the term consumer and brand as "the consumers are potential recruits and the 'brand' is the augmentation of recruitment services provided by recruiters as they espouse the firm's attributes and values during the recruitment process" (Knox & Freemann 2006).

Marketing literature recognises the importance to combine a company's internal and external image to manage the correlation of all brand concepts that can be recognised by customers, employees and job seekers (Dukerich & Carter 2000; Duncan & Moriarty 1998). This does not only impact the perception of the image among employees, potential employees and customers, it also aligns employees with the brand (Keller 2002). Nonetheless Ind (2001) points out those companies such as Nike which have de facto employer brands without an explicit human resource marketing strategy. However, most companies do not have this level of recognition by jobseekers as Nike has. For example, Eckhardt et al. (2007) present a case study of a German company and their need to evaluate an employer branding strategy to attract potential candidates. Indeed, there are a lot of different marketing methods that contribute towards the formation of the employer brand: recruitment marketing plans, outputs which may require advertising, press coverage, sponsorship, word-of-mouth endorsement and contacts with employees (Kennedy 1977; Dowling 1994; Dowling 2001; Stuart 1999).

In addition recruiting literature summarizes that the employer brand image is a significant predictor of early decisions made by new recruits about their employers (Gatewood et al. 1993). The perception of an employer influences on the one hand the perception of the recruiter's behaviour by an applicant and on the other hand the job and the perceived organisational attributes itself after the interview (Truban et al. 1998). Taylor and Bergmann (1987) discuss that the influence of communication on an employer brand image is particular in the early stages of the recruitment process. With respect to the 'war for talent', Ewing et al. (2002) and Ambler and Barrow (1996) introduce the notion of branding the firm to potential and existing employees in order to develop this as a distinguishing feature. They use the terms 'employment brand' and 'employer brand' respectively to characterise the package of functional, economic and psychological benefits provided by employment and identified with the employing firm.

Erickson and Gratton (2007) discuss the question "what it means to work here". They highlight that "companies that successfully create and communicate signature experiences understand that different types of people will excel at different companies, and that not all workers want the same things". They propose three elements of engagement for a company to foster deeply committed employees. First, a comprehensive understanding of potential employees' characteristics is needed. Second, a structured strategy of communicating an employer image that on the one hand conveys attributes and values of the organization to potential hires and on the other hand intensifies those to employees is necessary. Third, the communication must include a coherent employee experience. Erickson and Gratton (2007) conclude that companies need more than one employer branding strategy because of the different characteristics of the employers' target groups. Each group must be addressed by another strategy. In addition, Mitchell (2002) points out that a branding strategy has to be designed not only for external candidates but also for employees already working for the company to enhance productivity.

Some research has been made to discuss the impact and design of employer branding. Backhaus (2004) analyses how companies use an online recruiting platform (monster.com) to communicate their employer branding and Lievens et al. (2007) evaluate both the side of the applicant and the side of the employee, to consider what aspects are important for an internal and external employer image. Krichgeorg and Lorbeer (2002) introduce a model to include the different aspects of employer branding. Figure 1 illustrates that socio-demographic factors, personal values, the course of study, the current career status and occupational group influence information and application channels used by job seekers and the formation of employer and job requirements. An employer branding strategy has to address all five aspects that affect an individual's formation of employer and jobs requirements.

Due to the reason discussed in section 2.1 an integrated employer branding strategy is necessary. This section discusses the concepts of employer branding and image to communicate to employees the attractiveness of working for the company. The next section will present different approaches how to structure the different concepts of the recruiting challenges.

2.3 Recruiting Process

Various research contributions contain valuable approaches to define structure and stages of classic staff recruitment in large-scale enterprises. These processes differ a lot compared

to the recruitment in small and medium-sized enterprises. Recruitment in SME's is more related to the availability of a known individual than to the process itself. Atkinson and Meager (1994) found evidence of a correlation between business size and the adoption of formal recruiting procedures and confirmed this hypothesis. Several authors recommend a systematic procedure including four stages for starting a recruiting process; an assessment if vacancies need to be filled, a definition and broad analysis of the job profile, the production of a job description and a person specification (Carroll et al. 1999). The overall process was sectioned in three phases; generating applicants, maintaining applicant status and influencing job choice decisions (Barber 1998). These phases demand certain activities which have to be fulfilled. To generate applicants the companies have to advertise their vacancies in paper based or digital media. The maintaining of applicants could be strengthened by professional treatment during a site visit. Finally certain recruitment actions (e.g. the timeliness of a job offer) may increase the possibility whether an applicant accepts a job offer or not (Barber 1998). Breaugh and Starke (2000) used this phase-model to portray the recruitment process as a combination of activities, variables and strategic measures to achieve a number of recruitment objectives which outcomes are compared afterwards. Figure 2 now visualizes the model of the organizational recruitment process (Breaugh & Starke 2000).
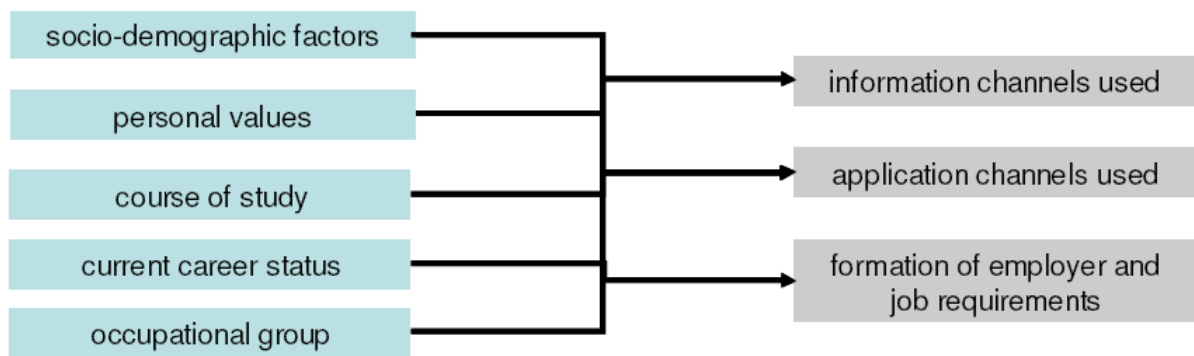

Figure 1: Analytical model explaining job seekers' behaviours
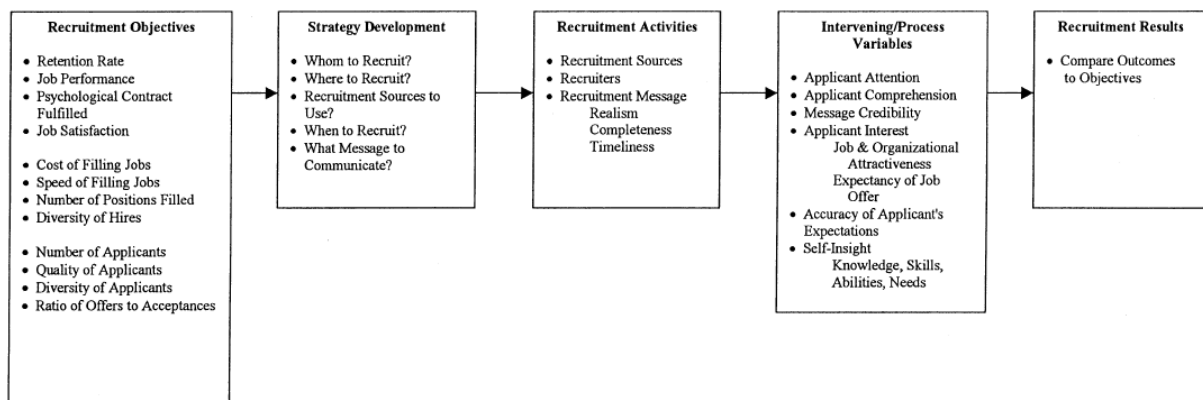(Kirchgeorg & Lorbeer 2002)

Figure 2: A Model of the Organizational Recruitment Process
Source: (Breaugh & Starke 2000)

In a next step Faerber et al. (2003) integrated the different recruitment functions within the process. Their model showed which tasks are related to the recruitment of new employees starting from the first contact between candidate and company till the signing of the contract. Based on prior work (Albert 1998; Schneider 1995) the process design contained recruiter's five main tasks; short- and long-term candidate, applicant management, pre-selection as well as the final selection of candidates. The focus in this approach is the management and tracking of applications in organizations as well as the integration of long-term attraction of applicants to build up the image as an attractive employer.

As seen a lot of research is made in the designing of recruiting processes and its related tasks. Despite the rising use of information technology just a little is known about the design of recruiting process and a supporting IT-function. A first valuable approach to design an e-recruiting process was made by Lee (2005), who developed a business process diagram to visualize intra-organizational information flows and internal processing events (Figure 3). A simulation using this business process diagram showed that the e-recruiting process produces better results for the time-to-hire (average process time) and costs per hire as the traditional recruiting process.
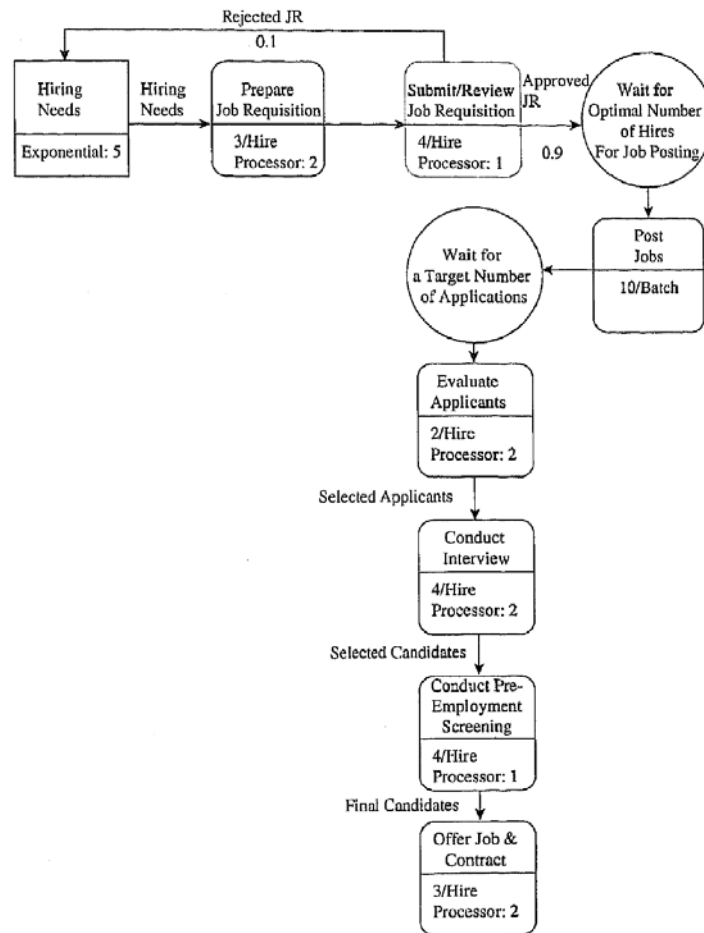

Figure 3: The business process diagram for the recruiting process
Source: (Lee 2005)

The opportunities offered by e-recruiting are visible compared to the traditional process not only in terms of process time and cost but also for process quality and external

circumstances as a talent shortage on the IT labor market. It is our aim to extend an existing architecture of an e-recruiting process (Lee 2007) to assure a constant high number of applicants as well as a successful measure to recruit IT professionals.

3. Extended Architecture

"Finding and retaining valued workers in information technology demands bold and innovative solutions" (Agarwal & Ferratt 2002). So we tried to extend an existing technology to improve the e-recruiting process. For it we chose the architecture of the holistic e-recruiting system, invented by Lee (2007).

3.1 Architecture

We extend this architecture by adding a new component for the e-recruiting process. We based this component on existing literature (e.g. Erikson & Gratton 2007, Kirchgeorg & Lorbeer 2002) and tried to solve existing problems in staff recruitment identified in theory and practice. These problems are:

- A talent shortage for several target groups, especially IT-professionals
- No chance to influence and convince candidates early in or before the recruiting process
- A cyclical recruiting of all companies on the labor market
- Appropriate alternatives to attract candidates

Figure 4 now shows the holistic e-recruiting system by Lee (2007) and our extensions to this approach (highlighted). Additionally to the new component of candidate attraction with employer branding campaigns we also added the dataflow between this component and an image campaign requisition management subsystem as well as the workflow management system. We also linked the component with a candidate relationship management system because especially the data of potential candidates gained in this phase are very important for candidate relationship management. The dataflow to the recruitment analysis performance subsystem will help to analyse this attraction measure (Figure 4).

3.2 Systems

The development of employer branding campaigns and the approval of a specific action are the two major task related to the employer branding process. The process is managed by the "image campaign requisition management subsystem" and its performance is analyzed by the "recruitment performance analysis subsystem". Thus, the focus of the system is to streamline the developing of employer branding campaigns and to establish an employer image of a company among actual and potential employees. Therefore the manager responsible for employer branding is the main user of the system, but also recruiting managers and top-management may use the systems.

3.3 Interfaces

The "image campaign requisition management subsystem" (ICRM) is the central system to manage employer branding activities and its activities are strongly connected with recruiting ones. Thus, this section is pointing out the interfaces between the recruiting management system and the ICRM.
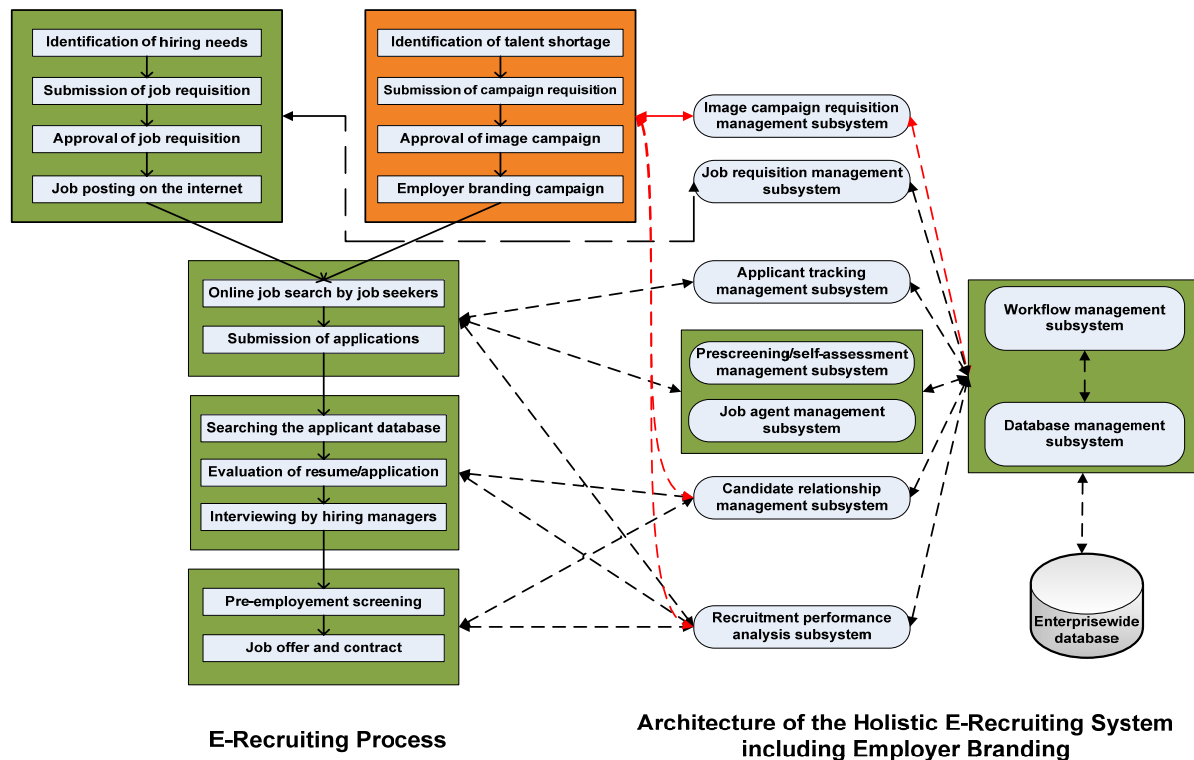
E-Recruiting Process

Architecture of the Holistic E-Recruiting System including Employer Branding

Figure 4: An extended architecture for a holistic e-recruiting system

First, the ICRM is connected to the workflow management subsystem and with the database management subsystem. All data and information related to employer branding activities is stored in the enterprise wide database and the workflow is managed by the central workflow management system.

Second, the recruiting performance analysis subsystem (RPAS) is connected with the employer branding process to measure the performance of employer branding activities. It can be analyzed for example if a specific employer branding activity is in charge for an increasing amount of qualified applications.

Third, the ICRM is connected with the RPAS via the workflow management subsystem. The ICRM can identify the need for specific employer branding campaigns based on statistics provided by the RPAS. For example, based on the decreasing number of IT-professional applications the ICRM can identify the need for a specific IT-employee campaign and the ICRM advice employer branding managers to develop valuable activities.

Fourth, if existing employer branding campaigns are valuable for being communicated in job ads the job requisition management subsystem can scan the enterprise database for specific implement activities to add them in their communication strategy.

4. Limitations, Implications and Conclusion

Our paper suggests an extension of the architecture of an holistic e-recruiting system by Lee (2007). We extend the model by including the concept of employer branding and

model the process with the steps 'Identification of talent shortage', 'submission of campaign requisition', 'approval of image campaign' and 'employer branding campaign'. Furthermore we added the 'image campaign requisition management subsystem' to support this process with IT. This subsystem is connected with the 'workflow and database management subsystem', 'candidate relationship management subsystem' as well as the 'recruiting performance analysis subsystem'. With this proposal employer branding can be support by IS to develop and implement effective employ branding campaigns.

The limitation of our research is that our approach is based in a literature review only. We discussed concepts of marketing, recruiting and information systems. The concept we recommended must be validated by a case study or empirical research to highlight the benefits of a holistic e-recruiting system. Even though, as Lee (2007) discussed, the holistic e-recruiting system is expansive and complex and a lot of companies have to choose a part of the system to support their needs.

Nonetheless the suggested architecture is the basis for the development of a system that supports the recruiting process. This is indeed a major implication for practitioners. We motivated our paper with the shortage of skilled staff. Therefore we can conclude that integrated system architecture is especially necessary for a competitive environment on the labor market. To develop our approach of employer branding we used an extensive literature review. Therefore we integrated marketing (brand), recruiting (employer brand, recruiting process) and IS concepts (IS architecture) concepts to holistic system.

Future research can benefit by this approach. The combination of different disciplines like marketing, human resources, recruiting, information systems, talent management, psychology etc. is needed to develop an architecture for a holistic e-HR system which integrates different tasks of the HR-function of a company.

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