

USABILITY STUDY ON DUTCH E-RECRUITING SERVICES

Limitations and Possibilities from the Applicants' Perspective

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Keywords: e-Recruiting, Usability Study, Service Innovation, Applicant Perception.

Abstract: In this research, applicants' perceived expectations, limitations and service improvements concerning two Dutch e-Recruiting services (monsterboard.nl and vacant.nl) are investigated. Data from interviews and videotapes have been analysed. The main perceived limitation in regard to e-Recruiting sites is the lack of personal communication and contact. The majority of usability problems stem from layout issues (monsterboard.nl), search functionality (vacant.nl) and lack of information (both). Better search and matching functions and the inclusion of personal elements into e-Recruiting service offerings were the foremost desires of users.

1 INTRODUCTION

In the Netherlands, there are currently 15 large e-Recruiting services on the market with vacancies ranging from 1,500 to 81,000 jobs (<http://www.allevacatures.nl>, 2009). Besides these large services, there are many niche providers, applicant pools and social networks offering various forms of online recruiting services. In most industrialized countries, recruiters' usage of online recruiting services has steadily increased, partly due to the fact that these services make it possible to attract a broader spectrum of potential candidates (Gueutal and Stone, 2005). The importance of online recruiting is even more recognized by international companies, i.e., recruiters from 96 of the Fortune 100 companies are customers of at least one external e-Recruiting service (Lee, 2005). While the presence of e-Recruiting services is increasing, research into applicant perceptions of these services is just emerging (Bartram). The widespread availability and large number of e-Recruiting services show that finding jobs online is an important asset for applicants who seek employment as well as for recruiters who aim to fill open positions as quickly as possible. In a recent study, internet search engines and websites were ranked third as a means for getting a job, just behind using personal networking and contacting professional recruiters. In the same study, the internet was ranked as the second most

helpful strategy for job hunting with personal networking taking the lead (Feldman and Klaas, 2005). Understanding how the quality of online services is perceived by applicants is important for an e-Recruiting site to be successful gaining and sustaining customers, i.e. returning applicants (Grönroos, 2007). Therefore, e-Recruiting services are challenged to analyze and incorporate the needs of their applicants into the design of their information systems so as to offer desirable services. In this context, other research has shown that applicants' decision to use an e-recruiting site largely depends on the specific resources or service attributes available (Koong, 2002). More than one in five job seekers has rejected vacancies simply based on poorly designed recruiting websites. Latest research shows that company-designed websites are often difficult to use with almost 75% of job seekers being at least partially unable to use them successfully (Maurer, 2007). Moreover, due to the quick turnover of applicants, large numbers of e-Recruiting services fail (Lin, 2002). Consequently, there is strong need to study limitations and possibilities of effective e-Recruiting sites. We reason, in line with previous research on human computer interaction (HICI), that the usability of e-Recruiting sites (as perceived by applicants) affects whether or not the site effectively facilitates the filling of job vacancies (Parry, 2008; Smith and Rupp, 2004). To complicate matters further,

different user groups (such as recruiters, applicants, personnel marketers) tend to have different points of view concerning the desired qualities of e-Recruiting services (Ettinger and Wilderom, 2008). It is important for online services such as these to analyze applicants' perceptions, and consequently design services in a way so as to meet their needs. The paper endeavors to discover applicants' perceptions, attitudes and expectations while using two Dutch e-Recruiting services (i.e. monsterboards.nl and vacant.nl) and gain insights on service innovations for encouraging potential (re-)use of these sites (<http://www.monsterboard.nl>; <http://www.vacant.nl>, 2009).

The paper is organized as follows. In section two, the research scope is described, including the research questions, test objects and participants. In section three, the research method is described in detail, including the experimental procedure, questionnaire and task structure, and data analysis. In section four, the results are presented. Conclusions and implications of this study are presented in section five.

2 RESEARCH SCOPE

This paper aims at exploring applicants' perceptions of limitations in using e-Recruiting sites as well as exploring which features users associate with highly useable e- Recruiting sites. Accordingly, the main question is: What are the limitations of e-Recruiting sites in general, and of monsterboard.nl and vacant.nl in specific, and how can e- Recruiting sites enhance the usability and service offerings to encourage (re-)use of these services? The following three sub-questions are investigated:

- (1) What expectations and experiences do applicants have regarding e-Recruiting services?
- (2) What are the perceived limitations of e-Recruiting services from the applicants' perspective?
- (3) How can e-Recruiting services improve their service offerings so that applicants will re-use the services?

These sub-questions provide added value in a variety of ways. First, through analyzing applicants' expectations and experiences, insights are gained on the gap between the quality of perceived and desired services. Second, qualitatively inquiring into limitations generates comprehensive data and an in-depth understanding about which services are perceived to be inadequate and which desired features are absent. Third, possible innovations or

improvements of service features identified by applicants are collected.

3 METHOD

3.1 Website Test Objects

Two websites offering e-Recruiting services were selected. The selection criteria were twofold; the sample had to include both one generally focused site and one site with a specific target group, and the second criterion was that the two sites have similar features. Including both a general and a specific site allows applicants to experience two "types" of e-Recruiting sites and provides a better basis for evaluation. Similarity in features makes it possible to compare usability results obtained from both sites. The decision was made to use monsterboard.nl and vacant.nl, the former being a general e-Recruiting site and the latter specifically aimed at university and university of applied sciences graduates (Koong, 2002). Both sites offer functions to search for jobs, online resume forms and newsletter registration, but differ in the amount and up-to-date status of vacancies, and website structure.

3.2 Participants

This study was conducted with a convenience sample of eight applicants, all of whom were students at the University of Twente, the Netherlands. The students participated voluntarily and were selected mainly on basis of educational level. Half of the participants were in a master's program, one participant had already graduated and three were bachelor students. The participants represented six different fields of study. The group was divided equally by gender, and the average age was 23.25 years. The majority of participants (seven out of eight) had little to no prior experience with e-Recruiting sites. All had experience with social networking sites. Thus the sample consisted of rather novice applicants who were not biased against one of the sites under study. All participants performed the same usability tasks and filled in the same questionnaires.

3.3 Experimental Procedure

We conducted eight sessions, with all sessions held in the same video lab. The video lab contained a laptop, three TV screens, a webcam and a video

recorder. The video recorder was used during each session to record the TV screen linked to the computer screen, and the webcam used to record facial expressions and the applicant's voice. The applicant used a test laptop to perform the usability tasks and browse the two e- Recruiting sites. Each of the eight session lasted between 2-2.5 hours, resulting in a total of over 16 hours of webcam and video data. The test and interview procedure remained constant during all sessions. Two researchers took field notes and observed the applicants performing the tasks. The sessions started by introducing the study's purpose, and asking the applicants to fill out the pre- task questionnaire. Following this, applicants received a task list for testing the usability of the two e-Recruiting sites. Each session ended with the post-task questionnaire. The applicants were asked to "think-aloud" during the whole session and to provide arguments for their answers verbally and in written form in the questionnaire. During the task execution, the researchers were allowed to inquire into the thoughts and motives of the applicants. This procedure was found to be useful for getting a quicker and more comprehensive picture of the applicants' perceptions.

3.4 Questionnaires

The applicants filled out two questionnaires, one pre-task and one post-task. The pre-task questionnaire contained open questions referring to demographic data, such as age, gender, education and experience with e-Recruiting or social networking sites. Another focal point was gathering which e-Recruiting sites the applicants knew, what general expectations they had and what limitations of e-Recruiting sites applicants verbalized. The post-task questionnaire consisted of multiple choice and open questions. The multiple choice questions were formed on a five-point scale ("very weak" to "very good") concerning applicants' overall impression and impression of the quality of both monsterboard.nl and vacant.nl. The open questions focused on asking which important features applicants felt were hard to find, perceived problems while using the sites, and suggestions on how to improve the sites.

3.5 Tasks

To evaluate the usability of the e-Recruiting services all applicants performed nine tasks on both monsterboard.nl and vacant.nl (see Table 1).

Table 1: Task List

1.	You are interested in working at Brunel Engineering; search all current vacancies at Brunel Engineering.
2.	You want to apply at Rabobank. Search for the recruiter's contact information.
3.	You want to find a job in Friesland and Groningen. Search for a position related to your current studies that may be suitable for you after graduation.
4.	You want an IT job in Utrecht. Search for a full-time position in the IT sector in Utrecht.
5.	You are interested in all university-level vacancies in Noord-Holland. Search for these vacancies.
6.	You want to contact the recruiting sites' service personnel. Search for their contact information.
7.	You are interested in the actual vacancies available; search all jobs in horeca and sort them based on when they were posted, and select those posted in the last 30 days.
8.	You are interested in receiving the sites' latest information. Sign up for the newsletter.
9.	You want to make a profile. Register and put a short resume profile online.

The tasks covered four key aspects. Tasks 1, 3, 4, 5 and 7 were designed to incrementally test the websites search functionality from a simple search (broad selection) to an advanced search (narrowing selections). Tasks 2 and 6 involved retrieving contact information from the websites, and task 8 required subscribing to the newsletter. The ninth and final task aimed at exploring the options and requirements of posting a resume profile. Throughout the execution of these tasks the applicants were asked to think aloud. Importantly, applicants were reminded that the study tested the website and not the applicants' personal skills or capabilities.

3.6 Data Analysis

The analysis of the collected data was divided into three parts: (1) the pre-task questionnaire, (2) the post-task questionnaire and (3) the task analysis. The answers to the pre-task and post-task questionnaire were derived by analyzing the filled-in forms, field notes, and video data. The results were supported by rich descriptions, i.e., quotes from the video analysis. If multiple applicants provided similar answers to the same questions, these insights were pointed out. The answers to the five-point scale questions are presented in four tables (see Table 1-4) representing the evaluation of both e-Recruiting sites

by all study participants. To more reliably detect defects and usability problems, the applicants' execution of tasks and website navigation was observed. For this analysis, the video data of both the computer screen and the facial expressions were analyzed, so that interpretation of verbalized defects (i.e. emphasis of certain salient defects, perceived overlaps, similarities or contradictions) would not be as difficult to judge. For the task analysis, one coder watched the full video and took note of all occurring defects. By means of a second assessment of 50% of the video data (eight hours), defects were categorized into broad defect categories. A second coder watched 10 % of the video material and independently derived defect categories. Comprehension issues in regard to labelling, inconsistencies, lacking categories and overlap between defect categories were discussed and resolved. In order to enhance code validity (internal and external homogeneity), one test applicant was asked to do "member checking" of the codes and also watched one full video session. The coding procedure resulted in a final set of six defect categories (see Appendix A). After having agreed on the labelling of the final defect categories and explaining the defects in one sentence, one coder watched the full video data and counted the total number of defects for each task and session on both e-Recruiting sites. The combined use of questionnaire analysis and website task analysis enhances the in-depth understanding of the research issues. While the task analysis mainly offers insights into applicants' experiences and limitations, the questionnaires allowed them to state expectations and express suggestions for e-Recruiting service improvement. Linking the qualitative results from questionnaires with the numbers from the task analysis leads to a better understanding of the e-recruiting services usability (Miles and Huberman, 1994).

4 RESULTS

The results are presented in three main sections: pre-task questionnaire results, website task results, and post-task questionnaire results.

4.1 Pre-task Questionnaire Results

The pre-test questionnaire was used to explore applicants' general knowledge and expectations of e-Recruiting sites. The results are derived from answers to open questions. It is interesting to note

that all applicants were familiar with monsterboard.nl although the majority (7 out of 8) almost never used e-Recruiting sites. Surprisingly, none of the applicants knew of the online career site for university graduates, vacant.nl. Further results show that almost all applicants (7 out of 8) would use the internet search engine Google or visit websites known to them in order to search for a job (6 out of 8). This finding emphasizes the impact of commercials and the significance of internet advertisement (i.e. search engine optimization (SEO) for getting applicants to recruiting sites.

4.1.1 Expectations general site

The applicants' expectations concerning (general) e-Recruiting can be found in Table 2.

Table 2: Expectations General Site

	Expectations	Applicant support (n = 8)
1.	Extensive Search Functionality	100%
2.	Enough Vacancies/ Fitting Jobs	100%
3.	Resume Forms/Upload	75%
4.	Company/Recruiter Information	50%
5.	Tutorial Information	37.5%
6.	Proactive Recruiters	25%

All applicants stated the importance of including extensive search functionality in e-Recruiting sites' design. The search engine should be easy to use and offer detailed selection options. One applicant supported this by arguing that "it should be easy to make a selection to filter out all the jobs I am not interested in." In addition, all applicants expected to see enough vacancies or fitting jobs on e-Recruiting sites. The local availability of enough suitable jobs was also suggested. The term 'fitting' is worth noting, because the interviewed applicants expected vacancies that matched their education and interests and not just any random vacancy. Another expectation verbalized by most applicants (6 out of 8) was the ability to register and apply, i.e. fill in their personal data into online resume forms. This was mentioned in combination with the expectation to find matches with vacancies and can be described as the option for Resume forms/Upload. Half of the applicants desired extensive company/recruiter information. One applicant acknowledged that he wanted to know "what a company is about" and others liked to have as much company information as possible in order to be able to see if they would fit

into the firm, rather than just meet the general criteria of the vacancy. Three applicants expected some tutorial information on how to use the e-Recruiting site. One applicant declared the need for "tips for people that don't know how to approach the site". Another expected a button that provides an "explanation of how the website works" and stated that "you don't have someone helping you to find a job using a website." Finally, two applicants expected proactive recruiters. These applicants expected to be approached with fitting vacancies by recruiters on basis of their personal information left on the e- Recruiting site.

4.1.2 Expectations academic site

The applicants identified three major expectations (see Table 3). These findings concern which expectations an academic recruiting site should meet, or additional features to differentiate the academic recruiting site from a general e-Recruiting site.

Table 3: Expectations Academic Site

	Expectations	Applicant support (n = 8)
1.	Academic Vacancies only	62.5%
2.	More Personal Approach	50%
3.	Information on Careers	37.5%

Five applicants mentioned that an academic site should have academic vacancies only. No jobs with low qualifications should be posted and irrelevant companies should not be allowed to post vacancies. One applicant articulated, "The offer they have of jobs is supposed to be of a different level" and another stated more specifically, "You don't want to see that you can be a garbage man in that and that city at an academic e-Recruiting site." A more personal approach is expected by half of the applicants (4 out of 8). Some applicants mentioned that you should be able to include your master's thesis subject in your personal information. Others were interested in exchanging information with students who are doing a bachelor/master thesis at the different companies they are interested in. One applicant said that "in graduate boards you get more sense of quality, I expect" and another suggested including an option to enhance online communication with other registered users: "It would be useful to get to know people who also graduated in your field with whom you can interact with." A third expectation was verbalized by three applicants as information on career opportunities.

This relates to the need for information from a company on growth and career possibilities and possibilities of on-the-job training or traineeships. Some similarities can be found between these findings and those in another study concerning e-Recruiting site attributes for job seekers (Koong, 2002). An interesting difference is that applicants in this study put much emphasis into integrating a more personal approach; they requested published company and recruiter information for different regions and branches, and tutorial information, which were not considered key attributes in the other study.

4.1.3 Limitations

The findings indicate that applicants expect e-recruitment sites to have three main limitations (see table 4).

Table 4: Limitations of e-Recruiting Sites

	Expectations	Applicant support (n = 8)
1.	Lack of Personal Communication	100%
2.	Lack of Responsiveness	37.5%
3.	Lack of Information Richness	37.5%

Applicants pointed out that e-Recruiting sites have several limitations in comparison to other ways of job searching options. Foremost mentioned was the lack of personal communication and anonymity. The applicants verbalized this as lack of personal contact, lack of face-to-face contact, lack of direct interaction or inability to steer the information exchange. One applicant supported this by saying, "A resume does not represent everything that you are." A second applicant mentioned, "You are not face-to-face with recruiters so people do not get a real and authentic first impression of you." And a third said, "These sites lack personal contact with people who have experiences or are part of the company you want to work for." This limitation is interpreted as the lack of personal communication. A second limitation was linked to the lack of personal contact. One applicant pointed out: "Sometimes it takes a week to get a reply, or longer" and another stated that she had doubts concerning responsiveness in regard to information requests. These results indicate a lack of responsiveness. In other research it has also been noted that the level of interactivity is a specific and important element for e-Recruiting success (Breugh, 2000; Maurer, 2007). A third limitation was formulated by one applicant as: "You don't know if all the offers are there; or if you are

missing something." Another applicant assumed that there might be more bad or wrong matches between job and applicant, because the job ad description might not be understood correctly. Finally, an applicant explained, "You want to know what the company is about and the people who work there, that's not going to happen using an internet site." This can be understood as a lack of information richness.

4.2 Website Task Results

All applicants performed the same nine website tasks described in Table 1. In the process of completing these tasks the applicants perceived or stumbled upon certain defects which were either verbalized, noted by the observers or identified during analysis of the video material. The defects were categorized according to the table in Appendix B and are presented for both monsterboard.nl and vacant.nl.

4.2.1 Defects overview

To enhance readability and comprehension of the table in Appendix B, here are some details about the table structure. The defects were counted per category type and per website. To structure the overview a distinction was made between tasks and resume, because the former required active use of the website and the latter a more passive comprehension of the resume fields. Another distinction was made between total and unique defects. Total defects summarize all defects found by the applicants during all tasks. The unique column shows the number of uniquely identifiable defects; duplicate defects were removed from this column. Using this structure the meaning and implications of the numbers could be derived with more clarity. An important characteristic of qualitative research is that often too much data and too many insights are collected. For this particular research it meant that it was impossible to code everything in the defect categories defined for this paper. The reader is advised to keep in mind that there are defects left unmentioned and the numbers below do not add up to 100% of the total defects.

4.2.2 Tasks monsterboard.nl

The results in Table 5 indicate that layout defects and lack of information defects represent the two major categories for total defects on monsterboard.nl. Together they represent 77% of all defects found.

Table 5: Defects Monsterboard.nl (Tasks)

Defect Category	Amount of defects	
	Total	Unique
1. Layout	42	7
2. Lack of Information	21	5
3. System	9	3
4. Matching	7	3
5. Terminology	3	3

The non-existence of data entry defects implies that the search options available were extensive enough for the applicants. Looking at the amount of unique defects per category, it can be seen that layout defects (7) and lack of information defects (5) were identified most frequently. Three defects each were found for the system, matching, and terminology categories. This can be understood by considering that the total amount of defects repetitively concerns three unique, distinctive defects. This shows that while doing the tasks on monsterboard.nl the applicants mainly experienced limitations due to layout problems and lack of information. Fifty percent of all layout defects were attributable to the search engine layout. Applicants could not easily find the search options required for successfully doing the tasks. Three defects covered 36% of the layout defects: (1) lack of clear company/recruiter information overview, (2) lack of clear contact button & information, and (3) lack of availability of a newsletter service & information. For some applicants it was also hard to locate the home button (7%), disguised by the title 'monsterboard.nl'. Finally, one applicant felt there could be more head menus instead of all links provided on the bottom of the page. Concerning lack of information defects, 29% were attributed to contact information not being sufficient. Insufficient help functionality and search option availability followed; both covering 24% of the lack of information defects. Fourteen percent of the defects were due to a lack of recruiter information which, when coupled with the earlier layout defect of company/recruiter information, is an important defect. Finally, the last 9% of defects are linked to two applicants that could not find their field of interest in the search engine. There were also some matching problems: searching for fields of interest and using multiple keywords without getting the expected results covered 84% of the matching defects. The other matching defect concerned matches giving the wrong location. One applicant, for instance, searched for a job in Friesland & Groningen, but got a result for a job in Moscow. It is

worth mentioning that all terminology defects were concerned with the "Bedrijfspresentaties" link, again connected to company/recruiter information. System defects involved search fields being cleared unintentionally (44.5%), annoying pop-ups (33.3%) and vacancy browsing problems (22.2%).

4.2.3 Tasks vacant.nl

There is a large difference between the total amount of defects identified for vacant.nl and the number identified on monsterboard.nl (see Table 6). Data entry defects occurred most frequently on vacant.nl, followed by lack of information, matching, and layout defects. The amount of unique defects per category was highest for data entry defects (7) followed by lack of information (4), layout (4) and matching defects (3).

Table 6: Defects Vacant.nl (Tasks)

Defect Category	Amount of defects	
	Total	Unique
1. Data Entry	23	7
2. Lack of Information	17	4
3. Matching	13	3
4. Layout	10	4
5. Terminology	3	3

The contribution of data entry defects should not be overemphasized. All of these issues revolve around the lack of search functionality. The search engine on the vacant.nl website lacked the key search options the applicants wanted to use. Vacant.nl needs to add search fields to select (1) employment type (i.e. fulltime, part-time), (2) up-to-date status of vacancies, (3) keyword field in quick search, (4) multiple provinces and cities and (5) the ability to use multiple keywords together. In the lack of information category, 41% of these defects concerned insufficient contact information under the contact link. Twenty-nine percent relate to difficulties in using the search engine. A lack of company/recruiter information was related to 24% of these defects. The final six percent were due to lack of information about the content of the newsletter when registering for it. The misplacement of the newsletter subscription outside the newsletter link and placement of contact information outside the contact link covered 60% of the layout defects. The other 40% relate to the misplacement of search options in the search menu. Matching inconsistency revealed 69% of the matching defects to be

connected to company names not matching company names used in keyword search. Twenty-three percent were due to keywords not being connected properly to find a desired match. The last 8% were a mismatch between search terms and a specific vacancy. The only outstanding terminology defect found concerned the meaning of the link 'Bedrijfsinformatie'. Further, one applicant noted a system defect related to the actual number of vacancies listed and the provided number of total vacancies.

4.2.4 Resume monsterboard.nl

Overall, filling in the resume forms on monsterboard.nl caused users to experience mainly terminology and lack of information defects, followed by some data entry defects, as shown in table 7. In terms of unique defects, lack of information defects scored highest (5), followed by terminology (4) and minor data entry (2), layout defects (1) and one system defect. These findings show that while filling out a resume on monsterboard.nl, applicants had mostly terminology problems, lack of information and some data entry problems.

Table 7: Defects monsterboard.nl (Resume)

Defect Category	Amount of defects	
	Total	Unique
1. Terminology	19	4
2. Lack of Information	13	5
3. Data Entry	6	2
4. System	2	1
5. Layout	1	1

Forty-two percent of the terminology defects were due to the definition of travel time, 32% to function title, 21% to resume title and 5% to the meaning of extra information. Uncertainty of the expectations that monsterboard.nl has concerning years of work experience covered 46% of the lack of information category. Thirty-one percent involve the lack of information in the resume help function. The final 23% of these defects relate to lack of information on (1) the use for a function title, (2) expectation of relocating for a job, and (3) deactivation of the resume. Eighty-three percent of the data entry defects were due to the expectation to fill in multiple work experiences on the first resume page. One applicant also mentioned there should be the possibility to select graduate status at the career level. Finally it is worth mentioning that only one

layout defect pointed to the positioning of explanatory information and two system defects covered two lost resume forms. It should be noted that losing the filled-in resume strongly negatively influenced the experience of applicants.

4.2.5 Resume Vacant.nl

The resume form on vacant.nl could only be tested by six applicants, as two applicants did not gain access to the resume forms due to activation emails not being received during the usability test. This was due to the e-Recruiting sites system defect. This might have resulted in fewer defects discovered. The resume form on vacant.nl is also less detailed than the one on monsterboard.nl. Most of the total identified defects dealt with terminology, lack of information, and layout defects. On the basis of unique defects found, terminology and lack of information both scored highest (3). System, layout and data entry defects each only had one unique defect identified (1).

Table 8: Defects Vacant.nl (Resume)

Defect Category	Amount of defects	
	Total	Unique
1. Terminology	8	3
2. Lack of Information	4	3
3. Layout	3	1
4. System	2	1
5. Data Entry	1	1

These results show that while filling out the resume form on vacant.nl, applicants had mostly terminology problems and lacked information. The definitions of 'personalisatie' (37.5%), 'overig' (37.5%) and 'resume title' (25%) were related to terminology defects. Lack of information mainly concerned who sees the resume (50%), explanation of certain selection boxes (25%) and whether the resume will be actively seen by recruiters (25%). All layout problems revolved around the misplacement of a function to upload a resume. One applicant also felt the need for a field to enter extracurricular activities.

4.2.6 Discussion

An interesting result of this usability study is that layout problems and lack of information are the two main defect categories for both e-Recruiting sites. In other research it has been pointed out that website content is not the only important component of a successful e-Recruiting site. Rather, formatting

attractiveness and functionality have been found to be important, too (Cober et al., 2004). Complementary research has even showed that formatting attractiveness could even be more important than usability issues (Thompson et al., 2008). Formatting attractiveness can be defined as the clarity and logical structure of a website design. To cater well to applicants, e-Recruiting site designers should consider adjusting the layout and providing more information on how to use the sites. Placement and provision of company/recruiter information can also be largely improved on for both websites. Other researchers also noted that job seekers frequently lack information on organizational attributes, i.e., more information about the job and/or organization makes these sites more attractive for applicants (Barber, 1993; Breaugh, 2000). The study participants emphasized the need for more personal contact which could be supported by this option. Changing the current placement of contact and newsletter information needs to be improved on both sites. While the search options on monsterboard.nl were judged to be extensive enough, the placement of search functions could be improved. A more obvious home button, better labelling and use of head menus would all be worthwhile to consider. For vacant.nl the search functionality should be expanded and the quick search menu should have a keyword search field. The layout of the search engine also needs to be redesigned. The applicants stated that for the resume fields at monsterboard.nl, better examples and more explanations could reduce the amount of defects. The same is applicable to vacant.nl, although here designers should extend the resume forms with the addition of more fields. One applicant expressed her concerns: "I don't get the impression I am making a really nice resume here."

4.3 Post-Task Questionnaire Results

Applicants also filled in a post-task questionnaire after finishing the website tasks. This information was used to summarize their experiences, and collect suggestions for enhancing the e-Recruiting sites' usability. The results were derived from open and closed questions.

4.3.1 Comparing impressions from monsterboard.nl vs. vacant.nl

Appendix C gives a rough overview of the overall impression applicants had of both websites. The majority of applicants ranked vacant.nl better, especially on website design structure, correct use of pictures, and suitability of font size/type. While the applicants were more impressed with the functions

on monsterboard.nl, they liked the individual website pages and color use at vacant.nl slightly better. Five out of eight applicants supported this opinion and stated that the website design of vacant.nl looked more clean and structured. According to some applicants: "It has less rubbish and better menus than monster", "I like structure", or "It looks more businesslike" and "No pictures are needed on a recruiting site, I want to basically search for jobs."

Some applicants stated that monsterboard.nl could make head menus with more comprehensive titles and links; the site was perceived to be too vertical with too many links at the bottom. Another point raised was that monsterboard.nl could reduce the amount of polls, pictures and advertisement. One applicant said it "looks like a commercial website."

In contrast to the overall impression, Appendix D shows that the applicants were more impressed by the quality aspects of monsterboard.nl. Especially the quality of information, search functions and matching fits were assessed better on monsterboard.nl. It is interesting to note that the majority of applicants preferred the placement of important menu items and navigated more easily on vacant.nl, although it scored 'very weak' on navigational ease for one applicant. Matching results on this website also proved to be weak. On top of improving their search and match functionality, adjustment or removal of the top vacancy list on vacant.nl was suggested by three applicants. The vacancies did not match their field of job interests so they felt this could be improved or removed. Fifty percent of the applicants also recommended that vacant.nl should aim to attract more job offerings, because the current amount of vacancies was considered too low and partly outdated.

4.3.2 Good versus Bad Site Characteristics

The applicants were also asked to identify good and bad characteristics of e-Recruitment sites after using monsterboard.nl and vacant.nl. Seventy-five percent of applicants (6 out of 8) claimed that search functionality and matching as most important. One applicant argued: "You are looking for a job, so the search thing is the most important thing" and "Quality of matching is important." Half of the applicants mentioned that a clear structure and overview of the e-Recruiting site is essential: "You have a good overview when the site does not appear too busy and you get the information you ask for". Another applicant explained: "It is better to have a basic website than a fancy one." Three of the applicants specifically mentioned that a good e-Recruiting site works proactively and has up-to-date vacancy information. One applicant said, "It is

important to find employers, and for employers find you...it is a two-way street" Other remarks made by applicants are as follows: (1) Expectation of a professional, clear website design; (2) It should have sufficient vacancies to service the target groups; (3) It should have a lot of information and presented in a clearly structured way. Naturally, one could assume that the opposite of these "good characteristics" may represent the "bad characteristics" of e-Recruiting sites, however applicants also mentioned several negative characteristics that were in addition to the opposites of the good characteristics.

Unrelated pictures, commercials or other distracting elements were regarded as bad characteristics of e-Recruiting sites by 62.5% of the applicants. "If there are a lot of features that are not directly related to finding a job in the way, this can be certainly considered as bad." Half of the applicants stated that matching problems are problematic for recruiting sites. One applicant said, "If you feel that the match functions don't work, this is really annoying." Another mentioned, "It is very discouraging when you do not directly find what you are looking for." Other research points out that a two-stage search engine can potentially reduce the amount of mismatches created. On stage one, this type of engine ranks jobs according to their match with the initial query and in stage two the user's learned search profile (personal search history) is applied to filter the relevance of the matches (Smyth et al., 2002).

4.3.3 Suggestions about Improvement

A final inquiry was done concerning the service offering of the studied e-Recruiting sites. The applicants were asked in which ways the services could be improved to make them come back and re-use these websites. When the applicants were inquired about features that would make them return to the e-Recruiting sites, 62.5% (5 out of 8) stated they would just use the site for searching for a job. "Just searching for a job, placing a resume and finding company information" was the goal of one applicant. A second applicant stated, "I don't expect so much from an internet recruiting site, I just want to be informed of jobs and that's it." A third applicant was "just looking for a job." An interesting finding was that 75% (6 out of 8) of the applicants specifically argued that social (network) or career elements would not make them come back to use the site. One applicant mentioned, "You don't want to make this into a Hyves or something." Further, one applicant explained, "There are already so many social sites and things." The majority of applicants did not expect social elements. If personal network elements were to be added to an e-Recruiting site,

the applicants felt that it would be important to maintain a difference between business and private life. One applicant said: "E- Recruiting sites should be "work-related and branch oriented, this is a nice addition." It was also suggested that unprofessional networks should be excluded, which implies that e-Recruiting sites have to be cautious about which network elements to include. The applicants in this research clearly require these elements to only be focused on their professional niche and career. Half of the applicants felt that published reports about other users' work experiences in different companies would make them re-use the e-Recruiting site, provided that the sources are reliable and objective. Three out of eight applicants felt that newsfeed elements such as new vacancy updates and resume statistics would make them come back to use the site. One applicant reported that it would be good if one could choose specific categories of jobs and regularly receive updates on new vacancies. A further applicant proposed, "It matters to me how many times my resume is viewed and how many people replied to a vacancy." Using alumni databases or other opportunities to draw alumni to e-Recruiting sites was suggested by two applicants. Another applicant suggested organizing digital career fairs with possibilities to interact with recruiters and applicants online". One applicant did not offer any suggestions for improvement of the online sites and prefers to go to career fairs and use personal contacts for searching for jobs.

5 CONCLUSIONS

In this paper, we investigated two Dutch e-Recruiting sites, i.e., monsterboard.nl and vacant.nl, to determine usability and possible service innovations of e-Recruiting sites. Perceptions, experiences and desires of eight applicants were analyzed using questionnaires and website task analysis. The findings imply that the e-Recruiting sites are expected to have extensive search functionality; sophisticated matching functionality; resume creation options; provide detailed vacancy, recruiter and company information; and aim for more personal and proactive contact between job seekers and recruiters. The backbone of a highly useable e-Recruiting site lies in its ability to support a multitude of correct matches between results and search terms that are up to date. Further, results show that the aesthetics of vacant.nl (website design) are perceived as providing a better overall impression to new users, but the functionality of monsterboard.nl swings the balance in their favor. Another striking conclusion can be drawn from the

task analysis: While monsterboard.nl has many layout issues accompanied by a perceived lack of information, vacant.nl requires more extensive search engines, more appropriate vacancies and also scores low on information quality. Apart from the limitations found during task execution, the applicants stated in the pre-task that the limitations of e- Recruiting sites mainly revolve around the lack of personal communication, responsiveness and information. There are many ways for e-Recruiting sites to improve their service offering. In this paper, several recommendations of how providers can learn from the perceived expectations and limitations were derived. This study shows that applicants require a clear overview of the e-Recruiting sites content and improving website design is one way to improve the usability of these sites. The applicants also expect more personal contact and interaction with the recruiter and company of their preference. Therefore, adding more organizational information can enhance an e-Recruiting services' use.

Multiple applicants were not concerned about reusing an e-Recruiting site in the long-term. Although they did provide suggestions for service improvements, for them the site provides a service for job-seeking at a certain time, and that is all that they need. Their need for social elements is already met by other networks like Hyves, LinkedIn and their personal network. Different demographic groups might have large variances in their expectations, experiences and perceived limitations of e-Recruiting services. These demographic differences and their impact on e-Recruiting sites might prove to be an interesting subject for further research. Another new research avenue that might be stimulated by this study would be to extensively observe (i.e. with eye tracking) recruiters navigating different recruiting sites and collecting data to compare the usability of these sites. This could also provide further insights on the intensity and frequency with which certain elements draw applicants' attention. For this study, time and resource constraints did not allow for the comparison of a larger sample of e-Recruiting services and participants. Other authors have successfully used a Job Site Evaluation Framework (JSOF) to compare multiple e- Recruiting sites (Terzis, 2005). Many e-Recruitment services exist in the Netherlands, quantitatively comparing their effectiveness and usability in future studies will provide more insights for job seekers, recruiters and managers. Although performing the eight usability tasks helped to elucidate limitations and problems the applicants experienced while using the e-Recruiting sites, it also limited the freedom of browsing to self-chosen places on the chosen test sites. If applicants were allowed to navigate more

freely, they might have found other defects or even encountered solutions to their perceived problems. This limitation however is partially offset by having enriched the results with the post-task questionnaire results. This study's limitations, especially this study's focus on only two e-Recruiting services, may suggest that the findings point to only one of many possible interpretations. Nevertheless, the comprehensively collected data, including memos, taped- interviews, digital and textual data, field notes and observation data provide a high degree of rigor and embody a multi- threaded chain of evidence that is important in achieving reliability and validity in qualitative research (Shadish et al., 2002).

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APPENDIX

Appendix A: Defect Categories

Category Name	Explanation
1. Layout defects	The applicant fails to spot a particular element within a page of the website.
2. Terminology defects	The applicant does not understand the meaning of certain words used on the website.
3. Lack of Information defects	The applicant perceives a lack of information to perform tasks successfully.
4. System Defects	The applicant loses data or experiences a problem due to system problems.
5. Matching defects	The applicant does not receive the matches expected with the used search terms.
6. Data Entry defects	The applicant is lacking the option to select/insert data which he/she wishes to use.

Appendix B: Defects e-Recruiting sites

Defect Categories	Monster tasks		Monster resume		Vacant tasks		Vacant resume	
	Total	Unique	Total	Unique	Total	Unique	Total	Unique
Layout	42	7	1	1	10	4	3	1
Terminology	3	3	19	4	1	1	8	3
Lack of information	21	5	13	5	17	4	4	3
System	9	3	2	1	1	1	2	1
Data entry	-	-	6	2	23	7	1	1
Matching	7	3	-	-	13	3	-	-
Total	82	21	41	13	65	20	18	9

Appendix C: Overall impression Monsterboard.nl vs. Vacant.nl

	Monsterboard.nl				Vacant.nl			
	weak	average	good	very good	weak	average	good	very good
1. Impression of the start page	25%	25%	50%		12.5%	12.5%	50%	25%
2. Impression of the sub pages	12.5%	37.5%	50%		12.5%	25%	62.5%	
3. Impression of the functions		62.5%	25%	12.5%		62.5%	37.5%	
4. Impression of the color use	25%	25%	50%		12.5%	12.5%	75%	
5. Suitability of fontsize and type	12.5%	37.5%	50%			25%	75%	
6. Design structure website	37.5%	62.5%			12.5%	12.5%	50%	25%
7. Correct use of pictures	37.5%	37.5%	25%		12.5%	25%	62.5%	

Appendix D: Quality impression monsterboard.nl vs. vacant.nl

	Monsterboard.nl				Vacant.nl				
	weak	average	good	very good	very weak	weak	average	good	very good
1. Information quality		12.5%	75%	12.5%		25%	37.5%	37.5%	
2. Navigational ease	25%	50%	12.5%	12.5%	12.5%		12.5%	50%	12.5%
3. Search functions	12.5%	12.5%	50%	12.5%		37.5%	50%	12.5%	
4. Match functions	12.5%	37.5%	50%		12.5%	50%	25%	12.5%	
5. Service quality	25%	37.5%	37.5%			12.5%	25%	37.5%	25%
6. System quality	12.5%	12.5%	75%			37.5%	25%	25%	12.5%
7. Placement of items	37.5%	37.5%	25%					75%	25%