

Some Observations On Web-Based Recruitment By Selected Fortune 500 Companies

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Abstract

Irrespective of size, industry, or location, companies and institutions are experiencing difficulty with recruiting and retaining qualified information technology professionals. To cope with the problem, companies and organizations are utilizing a variety of methods to gain access to prospective candidates. The Web has become one of the popular methods for recruiting talented individuals who are skilled in the area of computing and information technology. This study examines the use of Web technology by selected Fortune 500 companies to recruit computing and information technology professionals. Specifically, this research project identifies the type of employment information and methodologies that are included in the web sites of Fortune 500 companies. The results of this study should be of interest to personnel managers, Web-site developers, systems analysts, placement agency managers, consultants, legislators, immigration attorneys, and individuals responsible for generating governmental labor reports. Graduates seeking jobs, individuals looking for advancement, career counselors, computing and information technology faculty members, and researchers involved with Web-based recruiting and effectiveness will also find this study useful.

Keywords: Online recruitment, Web-based recruitment, information technology (IT) worker shortage, Fortune 500

1. INTRODUCTION

In the United States, 65 percent of all workers use some type of technology in their jobs (Educational Record 1995). Information technology professionals, in particular, have to ensure that computer information systems work well for people. However, the computer and the information technology industries are sectors that are continually changing. This is one of the primary reasons for the increasing demand for highly skilled computing professionals that can meet business needs. In order to be competitive in this industry, one has to be kept well informed of new innovations because the computer information systems must be designed, developed, implemented, supported and managed with cutting edge skills.

Statistics have shown that companies need information systems analysts, programmers, software engineers and other technical support representatives in order to function in a timely, organized and efficient manner (Bachler 1998). In most modern offices, these professionals represent essential personnel like emergency medical professionals are to a medical facility. Unfortunately, companies are finding that intelligent, competent, and reliable information

technology professionals on their teams are hard to retain. Companies in nearly every industry are also reporting serious difficulty in recruiting qualified information systems staff, "emphasis on the word qualified" (Garner 1998).

The shortage is said to have reached crisis proportions. With no signs of abating, this problem has caused some real angst for Chief Information Officers and information technology executives doing the hiring (Bridges 1999). According to the Information Technology Association of America (ITAA) survey conducted in 1998, there were 346,000 unfilled jobs for programmers, system analysts, and computer scientists in American companies (ITAA 1999; U.S. Department 1998). This type of a report is most discouraging because the survival and growth of companies depend on having competent and skilled IT employees who are able to function in high stress environments to bring innovative products to market (U.S. Department of Commerce 1999).

In the last decade, an increasing number of companies, both large and small, are beginning to implement the use of information technology in their organizations by having web sites on the Internet. To address the

computing personnel shortage problem, the Internet is being used as an alternative recruiting tool. The Internet has been proven to be an effective tool for targeting people all over the world. With the shortage of information technology professionals, many organizations have found it hard to keep these professionals on their teams. Some companies have chosen to approach this tremendous obstacle by changing their recruiting methods. With the implementation of corporate web sites, companies have initiated the use of their web sites for recruiting information technology professionals. Many growth-oriented businesses have found the Internet to be a key part of their recruiting strategy (McGarvey 1999; Greengard 1998; Vaas 2000).

The Internet enables recruiters to reach applicants from all over the world. Compared to classified advertisements, the Internet's impact on recruitment has been tremendous in terms of number of responses elicited and speed of hiring (McGarvey 1999). There are several reasons why organizations are finding this new and innovative recruitment tool to be very beneficial to their strategy of recruiting information technology professionals. First, the Internet can reach the perfect audience better. Most information technology professionals tend to visit many different web sites on the Internet. Second, Web-based recruiting appears to be cost effective. Electronic communication such as e-mail and list-servers have made the recruiting process almost paperless. There is no longer a need to print out advertisements for the classified sections in local newspapers. Acknowledgements no longer have to be mailed. Less paper and less postage means fewer expenses. Finally, Web-based recruiting efforts are perceived to be easier to manage (Hays 1999). They tend to generate faster responses from applicants, which in turn help shorten the hiring process.

As a matter of fact, Web-based recruiting is slowly becoming the norm, especially among progressive and large companies. Some companies are already changing their traditional recruiting methods to online recruitment. Given the current shortage of information technology professionals, it is believed that the faster the company can engage an applicant via the Internet, the better its chances of hiring that prospective person (Hays 1999).

2. STATEMENT OF PROBLEM

The shortage of information technology professionals has been an ongoing nationwide phenomenon for at least the past ten years (Cothran 1998). The Information Technology Association of America (ITAA) reported that one in ten computer-related positions go unfilled (Garner 1998). The proliferation of information technology among companies and the year 2000-date transition were said to be the primary causes for the intense demand for information technology personnel.

Most discouraging about this shortage of qualified information technology professionals is that this problem is a threat to the stability of organizations that have come to rely on efficient and effective information technologists for their survival.

Projected news about the information technology market remains bleak. The Bureau of Labor Statistics' forecasts indicated that between the year 1996 and 2006, the United States will require more than 1.3 million new information technology workers. This averaged out to be approximately 137,800 workers per year to fill newly created jobs and to replace workers who are leaving these fields as a result of retirement, change of professions or other reasons (U.S. Department of Commerce 1999).

By the way, between 1983 and 1998, data from the Current Population Survey, a joint project of the U.S. Department of Commerce and Labor, showed the number of computer system analysts and computer scientists soared from 719,000 to 2,084,000. This was an increase of 190 percent which is six times faster than the overall U.S. job growth rate of 30.4 percent (U.S. Department of Commerce 1999). Despite this rate of growth in available information technology professionals during the period, companies and other organizations are still reporting unfilled positions.

This intense labor shortage has caused set backs in organizations. Major projects have been set aside because qualified personnel are not available to handle these endeavors. The various industry sectors are creatively finding solutions to close the information technology skills gap. However, according to Harris Miller, the president of ITAA, the United States labor market continues to experience a disconnect between skills sets that employers demand and the education, training, and experience of many American workers.

3. STATEMENT OF OBJECTIVE

Since the dearth of information technology professionals is at an all time high, companies are using alternative methods for recruiting information technology staff. It has been predicted that by the end of 2000, about 96 % of companies in the United States will employ the Internet in their hiring and/or recruiting activities (Hays 1999). This study examines how companies are actually using their web sites to recruit information technology professionals.

The outcomes of this research should be most helpful to recent college graduates, career counselors, people seeking jobs for advancement opportunities, and headhunters for major corporations. The findings from this research should also provide readers with useful information about how corporations are employing the Web as a recruiting medium and convey some management implications about its effectiveness.

Educators and students involved with Web site design will find this study helpful. The features examined in this research may provide them with important insight about essential elements that should be included for the development of effective online recruiting systems.

4. DATA GATHERING

Fortune 500 companies were the targeted population for this study. The most recent list of Fortune 500 companies was obtained using an Internet search with the search engine Yahoo.com. The following procedures were used for gathering the data:

Step 1. The key word that was provided to the search engine for searching the web-databases was “Fortune 500 companies”. The results from this Internet search were obtained from the web site called Fortune 500.com. This web site contained a comprehensive list of Fortune 500 companies ranked from first place to the 500th place.

Step 2. The sample size was calculated by using an online sample size calculator provided by Creative Research Systems located on the Internet at <http://www.surveysystem.com/sscalc.htm>. The parameters used were as follows:

- Confidence level: 95%
- Confidence interval: +10 or -10
- Population: 500

Based on the finite sample model, the calculated sample size needed was of 81 companies.

Step 3. The RANDBETWEEN function was used to produce a list of 81 random numbers. Each random number was matched with the ranking number of the Fortune 500 companies listing. This process was done using Microsoft Access by joining two tables in a query. The first table containing the random numbers and the second table containing the list of Fortune 500 companies and their rankings were merged to produce the list of the companies selected for this study.

Step 4. Once the sample was selected, each company's web site was examined. The data collected was then entered into a database using Microsoft Access for analysis. Specifically the following variables were identified:

- Are companies recruiting information technology professionals on their companies' web sites?
- What is the industry type?
- What types of positions are available?
- Are degree requirements indicated?
- Are citizen requirements indicated?
- Is salary and benefit information indicated?

5. STATEMENT OF HYPOTHESIS

Four major hypotheses about the characteristics of Web-based recruiting by Fortune 500 companies were tested

in this study. The hypothesis are as follow:

H1: Less than 50 % of the companies are engaged in Web-based recruiting.

H2: Less than 50 % of the companies indicated citizenship requirements.

H3: Less than 50 % of the companies show salary and/or benefit information.

H4: Less than 50 % of the companies show degree requirements.

Rejection of the null hypotheses will imply that the characteristic examined is a major feature used by most Fortune 500 companies.

6. METHOD OF ANALYSIS AND PRESENTATION

The gathered data from the companies' web sites was manipulated using queries. The queries allowed the data to be viewed and analyzed in different ways. Percentages were calculated on all the variables. Conclusions were drawn by the use of absolute numbers and percentages for all the factors. The data was also examined for possible trends that may exist.

The following rules were used for testing the hypothesis:

1. The null hypothesis was rejected if at least 50% of the companies reported a variable.
2. If 90 % or more of the companies are reporting a variable, it is considered a dominant management strategy.
3. If 75 % or more of the companies are reporting a variable, it is considered a significant management strategy.
4. If 50 % or more of the companies are reporting a variable, it is considered an essential management strategy.

The outcomes from this study were presented in the form of tables. First, the identified population and the demographic profile of the sample were featured. Then the outcomes of all other variables were presented and assessed based on the hypothesis tested. Analysis of the hypotheses were discussed and presented in textual format.

7. FINDINGS

Of the 500 companies, 81 companies were selected for inclusion in the sample size. Variables were collected from 80 of the companies' Web sites. One company, Smithfield Foods, did not have a Web site.

Out of the 80 selected Fortune 500 companies, 61 companies were involved in Web-based recruitment of information technology professionals. The tally of companies involved in Web-based recruiting is therefore 75 percent. The percentages in the Tables were

computed by dividing the number of observations by 61. Demographic information about the target sample and the 61 companies involved with web-based recruitment are presented in Tables 1 through 7.

With the exception of Fortune 500 companies located in the Western region, the distribution of companies using Web-based recruitment appears to be fairly evenly distributed in the United States. The rest of the information is presented in the Table 1.

Table 1. Involvement in Web-based Recruitment

REGION	No	Yes	Percent online
MIDWEST	2	17	28
NORTHEAST	9	19	31
SOUTH	5	19	31
WEST	4	6	10
TOTAL	20	61	100

Thirty-eight companies, or sixty-two percent of the companies engaged in online recruiting, indicated degree requirements on their web sites. Again, with the exception of companies located in the Western region, the number of companies showing degree requirements appears to be equally distributed among the other three regions. The rest of the information is presented in Table 2.

Table 2. Degree Requirements

REGION	No	Yes	Percent Needed
MIDWEST	6	11	18
NORTHEAST	6	13	21
SOUTH	9	10	16
WEST	2	4	7
TOTAL	23	38	62

Only one company provided some form of salary figures for their positions listed. The salary figures were presented in range format. That company was Anheuser-Busch, Inc. The rest of the information about salary indications is presented in Table 3.

Table 3. Salary Indications

REGION	No	Yes	Percent Showed
MIDWEST	16	1	2
NORTHEAST	19	0	0
SOUTH	19	0	0
WEST	6	0	0
TOTAL	60	1	2

Like salary indications, most of the Fortune 500 companies engaged in online recruitment did not indicate that only citizenship or permanent residents could apply. Only seven out of the 61 companies

indicated that requirement. The rest of the information is contained in Table 4.

Table 4. Citizenship or Permanent Resident Requirements

REGION	No	Yes	Percent Required
MIDWEST	13	4	7
NORTHEAST	18	1	2
SOUTH	18	1	2
WEST	5	1	2
TOTAL	54	7	13

The seven companies that indicated citizenship or permanent resident requirements are listed below:

- BellSouth
- Cigna
- Ford Motor
- Proctor & Gamble
- Sara Lee
- Walgreens
- Wells Fargo

At least half of all the companies engaged in online recruiting indicated benefit information on their web-sites. Also, at least half of the companies in every region are indicating benefit information. The rest of the information is contained in Table 5.

Table 5. Benefit Information Indications

REGION	No	Yes	Percent Showed
MIDWEST	10	7	11
NORTHEAST	7	12	20
SOUTH	7	12	20
WEST	2	4	7
TOTAL	26	35	57

Information about the types of jobs available on the Web sites of Fortune 500 companies are presented in Table 6. There are 797 jobs listed by the 61 companies. In other words, each company has an average of 13 jobs listed on the Web. Almost half of the jobs are located in the Southern region. A little over ten percent of the jobs are for management positions. The rest of the information is contained in Table 6.

Table 6. Types of Positions

REGION	Management	Percent	Staff	Percent
MIDWEST	19	2%	81	10%
NORTHEAST	11	1%	157	20%
SOUTH	43	5%	394	49%
WEST	4	1%	88	11%
TOTAL	77	10%	720	90%

Some 70 percent, that is, a good majority of the information technology jobs listed were categorized under "Other" because these job descriptions require more than one area of specialty. With the exception of

programming, there appears to be almost equal number of jobs in the areas of database, networking, and web development. The rest of the information is presented in Table 7.

The commercial banks have the largest number of job openings. Thirty seven percent or 296 of the 797 jobs are contained in this sector. The next top three industries that have at least 50 job openings are diversified financials, insurance, and wholesalers. The rest of the industries that have at least ten job openings are electronics, electrical equipment, general merchandisers, motor vehicles and parts, food and drug stores, pharmaceuticals, healthcare, pipelines, and telecommunications.

Table 7. Types of Computing Related Positions

JOB TYPE	MID-WEST	NORTH EAST	SOUTH	WEST	NO.	%
Database	5	17	17	6	45	6%
Net-working	11	5	16	11	43	5%
Other	68	55	374	59	556	70%
Program-ming	11	70	17	10	108	14%
Web Develop-ment	5	21	13	6	45	6%
TOTAL	100	168	437	92	797	100%

8. DATA ANALYSIS

Four major hypotheses were tested in this study. Each of these hypotheses was tested using the 50 percent rule. The hypotheses and outcomes of the four tests were as follows:

H1: Less than 50% of the companies are engaged in Web-based recruiting.

Hypothesis 1 was rejected. Approximately 75 % of the companies engaged in Web-based recruiting.

H2: Less than 50% of the companies indicated citizenship requirements.

Hypothesis 2 was not rejected. Only 11% of the companies engaged in online recruitment specified citizen requirements on their Web sites.

H3: Less than 50 % of the companies showed salary or benefit information.

Hypothesis 3 has mixed outcomes. Only 2 % of the companies displayed salary information on their Web sites. However, fifty-seven percent of the companies showed some form of benefit information.

H4: Less than 50 % of the companies showed degree requirements.

This hypothesis was rejected. Approximately 62 % of the companies specified degree requirements for job listings on their Web sites.

9. SUMMARY AND CONCLUSIONS

This study identified several important characteristics about the use of Web-based recruitment by Fortune 500 firms. First, this research project validated the existence of the information technology professional shortage problem in the labor market. Each of the 61 Fortune 500 companies that engaged in online recruiting has an average of 13 jobs that needed to be filled. Educators counseling graduating students may want to encourage them to use this new hinterland called the Web to seek out the type of jobs that best match their desires.

Second, about 70 percent of the jobs identified require multiple job skills. That means, during the academic preparation process, students should not be overly specialized by concentrating only in one area. They should acquire sufficient breadth in the body of knowledge to be marketable. Ideally, they should have the type of skills that can integrate applications from a systems perspective.

Third, this research found that certain information represented essential elements that must be included when recruiting online. Faculty members and students involved with the development of online recruiting systems may want to include only those essential features identified in this study.

Finally, based on the other results obtained from this study, there are a number of strong implications for engaging Web-based recruiting and for using the following managerial strategies for confronting the computing labor shortage problem:

1. Internet recruitment is practiced by at least 75 percent of the Fortune 500 companies in this study. For so many Fortune 500 companies to be involved in this practice, it is most probably an effective management strategy.
2. The Internet is the place for recruiting information technology professionals, especially for staff positions and positions that require multiple expertise.
3. Commercial banks, diversified financials, insurance, and wholesalers may especially want to use the Internet for recruitment. Many of their peers in the Fortune 500 group are already recruiting online.
4. It is not a common practice to display salary information on their Web sites. Most companies do not specify citizenship requirements. These two practices imply that salary information and citizenship requirements are non-essential

- elements. As a matter of fact, they may even have the potential of discouraging applicants.
5. The majority of the companies engaged in online recruiting do display benefit information and degree requirements on their Web sites. This implies that these two elements are common management strategies for online web recruitment.

10. DIRECTIONS FOR FUTURE RESEARCH

This research can be expanded upon in many ways. First, the targeted population may be extended to the Russell 2000 companies or selected firms listed in the Dunn and Bradstreet Million Dollar Directory. A larger targeted audience can provide information that is more reflective of the whole economy. Second, since using the Internet is so common now, it would be of great interest to know how many hits per day or month or year each company is actually getting on their recruitment web site. Third, it would also be of interest to find out how many information technology professionals are applying online and are actually hired.

Finally, the shortage of information technology professionals is expected to be an ongoing issue. This problem will continue to be monitored by private institutions and government agencies. It would be beneficial to re-examine this issue periodically because trend information can help the federal government to develop more effective policies and to better implement priorities that can best serve this country.

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