Sacred Heart
UNIVERSITY

Sacred Heart University

DigitalCommons@SHU

WCBT Faculty Publications

Jack Welch College of Business & Technology

2004

Gender Bias in Internet Employment: A Study of the Effects of Career Advancement Opportunities for Women in the Field of ITC

Andra Gumbus
Sacred Heart University, gumbusa@sacredheart.edu

Frances Grodzinsky
Sacred Heart University, grodzinskyf@sacredheart.edu

Follow this and additional works at: https://digitalcommons.sacredheart.edu/wcob_fac

Part of the Human Resources Management Commons, Organizational Behavior and Theory Commons, Women's Studies Commons, and the Work, Economy and Organizations Commons

Recommended Citation

Gender Bias in Internet Employment: A Study of Career Advancement Opportunities for Women in the Field of ICT

Andra Gumbus and Frances Grodzinsky

Sacred Heart University, Fairfield, CT, USA
Email: {gumbusa;grodzinskyf}@sacredheart.edu

ABSTRACT

COVERAGE

Women as individuals experience subtle discrimination regarding career development opportunities as evidenced by research on the Glass Ceiling. This paper looks at the ramifications of technology, specifically the Internet, and how it affects women's career opportunities.

INTRODUCTION

Women as individuals experience subtle discrimination regarding career development opportunities as evidenced by research on the Glass Ceiling. This paper looks at the ramifications of technology, specifically the Internet, and how it affects women's career opportunities. Some questions explored are:

- Are women less likely to use technology in their career development initiatives?
- How has the Glass Ceiling impacted women in the technology field?
- Do women utilize networking as a career enhancement strategy?
- Are women adversely affected by the use of the Internet in securing employment?
- Does the use of Internet recruiting and paperless HR departments adversely impact women as candidates?
- Is the hierarchical male power structure maintained by the increased use of technology by corporate recruiters and other hiring managers?

Part one of the paper will discuss women and technology in general including issues of gender bias. It will examine the literature on women seeking careers in technology and look at women's use of technology in their career development initiatives. Part Two will explore aspects of the corporate culture that impact the advancement of women in ICT including the glass ceiling, and how the Internet has impacted the advancement of women. Part Three will examine the question of recruitment on line and ask if women are disadvantaged by paperless Human Resource Departments. The authors will demonstrate that for women to overcome gender bias, the glass ceiling and resultant under representation in upper level ICT management positions, there needs to be a change in the educational and corporate culture.

KEYWORDS

Gender bias

Glass Ceiling

Women in ICT

Internet Employment

WOMEN AND TECHNOLOGY

Are women less likely to use technology in their career development initiatives?

In order to best answer this question, it is interesting to investigate the literature on women pursing computing careers and then to ascertain if and how women use

---

There are still many ways of subtle and not so subtle discrimination against women in the workplace

---

technology in the pursuit of career development initiatives.

WOMEN AND COMPUTING CAREERS

Research on first year university students pursuing computing careers suggests that gendered and gender differentiated views of the computer industry exist and women have stronger gender stereotypes than men (Turner, 2002). Her findings confirm that the perception of computer science as a masculine field is valid (Van Oost, 2000) and that university women continue to have a low opinion of their technical knowledge and skills, as identified in past research (Stepulevage, 2001). She found evidence of gender stereotyping when students were asked to assign a gender to various disciplines of computing. Stereotypical views of the softer disciplines as female and the harder disciplines as male were expressed confirming her prior research (Turner, 2001). Her study revealed that men saw most computer disciplines as male and both sexes viewed multimedia, desktop publishing, and word processing as female. Women perceived the hard core computing fields such as robotics, engineering and systems architecture to be masculine. (Turner, 2002).

Gendered and gender differentiated views of the computer industry are detrimental to women, support gender discrimination and sexism in the field, and may contribute to fewer opportunities for women in the computer industry. The fact that women are underrepresented in the

field contributes to an uneven economic playing field and raises ethical issues concerning hiring practices. These stereotypes have a deleterious effect on career choices for women. "The process that begins during education continues into the life of work: the gender stereotypes influence the choice and direction of career. Yet, there are greater ramifications beside just the choice itself. If these choices are influenced by the stereotypes, they impact the way technology is created and constructed. The absence of women in areas of design of technology, for example, omits a non-male perspective in the creation process. If we do not understand and evaluate this process from more than a male perspective, we inevitably harm others and put them at a disadvantage." (Turner, 2002). Developers of ICT have an obligation to incorporate the best creative energy available in order to create the best products; this should include an unbiased evaluation of all job candidates irrespective of gender.

The problem of women and technology as researched by Gorniak-Kocikowska has roots in the history of the relation between women and technology since the industrial revolution. Her research also confirms that women tend to value emotions, feeling, community, and collaboration, areas that tend to be underrepresented in the ICT field.

The research of Gorniak-Kocikowska and Pakszys provides insight into why a gender gap within ICT continues to exist today. Women have greater professional choices and may have less interest in ICT in competition with other career fields. Lack of early encouragement to pursue science, math, and statistics of women engineering graduates who do not work in the field reflects this gap. Discrimination exists in the male dominated ICT culture. " There are still many ways of subtle and not so subtle discrimination against women in the workplace, and the ICT-related institutions and organizations are not completely free from it. The culture of ICT is definitely male-created and male-oriented. A computer science lab might have as much a macho atmosphere as did a 19th century science lab." (Gorniak-Kocikowska and Pakszys, 2002). The perception of a male-dominated ICT culture makes it less attractive to goal-oriented women who want equality from the start of their careers

in the work place and the possibility of advancement within that career.

In a survey developed for this study the authors asked about gender discrimination in the ICT field. Dan Winschel, Principle at DRW Associates, a technical search firm specializing in IT professionals, said that discrimination does not exist in his opinion. Winschel felt that many women want part time or more flexible arrangements at the point in their careers when they might be candidates for a top ICT job and that is the reason we don't see many in upper level management. The NSF Report on Women, Minorities and Persons with Disabilities in Science and Engineering: 2000, found that balancing work and family responsibility was the number one challenge facing women scientists and engineers (71.4%) (Rosser, 2003). A change in the corporate culture that builds in flexibility might alleviate the drain of top women talent from the industry. Winschel remarked that lower level ICT positions sometimes have a need for personal strength such as PC tech or computer operator jobs that require lifting printed material from high-speed printers that run at 1500 pages per minute. Hardware tech positions also can require lifting computers and monitors that may advantage men over women for these entry ICT positions. Other managers, however, responded that ICT is a "good ole boy network with an attitude that keeps women out of the male club". One manager said "I sent a qualified female applicant with 5 years experience for a job at the help desk. She was better qualified and more mature than the male that got the job. I feel it was discrimination since the department is all male." Another perception of women in the NSF study suggests that women are not taken seriously as candidates for research positions because they are perceived as a better fit for teaching and service positions; consequently, they do not receive a lot of support in the form of grants (Rosser,2003).

There are many reasons why it is desirable for women to increase involvement in ICT (Margolis and Fisher, 2002). Women represent a market for computer products and computer education. Since technology is widespread, global, and pervasive, it can create unfair advantages to those who wield the economic power ICT represents versus those who do not. It is desirable for women to be represented within this empowered group. With the advent of the Internet and chat rooms, there has been an increased interest among girls in computing technology. An update to the Report Card on Gender Equity in 2002 indicates that girls have closed the gap in math and science and now in technology. Schools no longer report differences in the numbers of boys and girls on computers, and Internet use is almost identical. (A Nation Online, 2002). Girls are using computers to IM their friends and shop, but continue to be underrepresented in technology careers. Research indicates that girls do not lag behind in technology competence; however, they are not attracted to the standard programming class and report technology jobs as uninspiring. (Tech.savvy, 2000). The NSF publication cites that undergraduate degrees for women in computer science have dropped from 37% in 1984 to 20% in 1999. In 2000 women received 29.3% of masters degrees and only 16.2% of PhD's in computer science. It was even lower in engineering (Rosser, 2003). These statistics translate into fewer female role models and mentors both in education and business. Changing the educational climate for women in technology will have a trickle up effect into the corporate environment. How to attract more women into the ICT field is the subject of current research in the field and beyond the scope of this paper.

TECHNOLOGY AND CAREER ADVANCEMENT

Women, who eschew technology, limit themselves to traditional job searches. The Internet provides a wealth of information about companies, hiring practices and job opportunities to those with the skills to access the information. Posting resumes on Monster.com or searching job postings on university websites can often advantage a candidate for a job because of the speed and easy communication paths afforded by the Internet. The development and use of computers bestows power on the user and conversely, lack of power for those who are not connected. Yet, there may be a downside for women posting resumes on Internet sites. Moor (1997) speaks of computerized information as

135

greased data and states, " our challenge is to take advantage of computing without allowing computing to take advantage of us. When information is computerized, it is greased to slide easily and quickly to many ports of call. This makes information retrieval quick and convenient, but legitimate concerns about privacy arise when this speed and convenience lead to the improper exposure of information." The resulting electronic footprints of information collected for one purpose can be used for another. Our privacy can be invaded despite attempts to guard and secure computerized information.

Research done by Systers, an online organization run by and for women in computing, revealed that women may experience fear in participating in networking chat rooms, online career groups, and even job sites if they share concerns about confidentiality. Women may be fearful of posting resumes on the Internet, thereby revealing contact information, lifestyle, income and other personal attributes found on a resume. In addition, although the Systers list is supposedly private, "posting information anywhere that one is dissatisfied with one's job, and especially that one's company is sexist, could have a severe impact on one's career. Even posting such things about a former employer could affect how a person is seen by a potential future employer." (Lemons and Parzinger, 2001).

CORPORATE CULTURE AND GENDER BIAS

The culture of an organization reflects what people habitually do in the particular environment absent rules and regulations. Several aspects of corporate culture impact the advancement of women in ICT organizations.

ICT and the Glass Ceiling

The glass ceiling phenomena was first coined in a Wall Street Journal article in 1986, and continues to describe the lack of upward mobility for women and minorities into executive ranks in corporate jobs today. The road to the top positions was described as blocked by corporate preju-

dice and traditions resulting in lack of support for women and sponsors (mentors). In 1986, the biggest obstacle was labeled as intangible; "men at the top feel uncomfortable with women beside them." (Hymowitz and Schellhardt, 1986). The authors predicted that the glass ceiling may be reduced in some fields but technology was not one of them. "The caste system undoubtedly will crumble more quickly in some fields than in others. It may disintegrate within a decade in financial services, insurance and retailing, where women make up a third of all managers. It also could happen relatively soon in banking and communications, where sizable numbers of women hold top posts in middle management. But in manufacturing and technology companies, women are a long way from the executive board room." (Hymowitz and Schellhardt, 1986). The glass ceiling still exists almost 20 years later and has led to a brain drain of women exiting their corporations, starting their own business or working at smaller companies. This poses a threat to corporations as they lose experienced managers for lack of promotion into high profile and profit center based jobs.

The glass ceiling is a form of discrimination against women and contributes to women's lack of access to decision-making and power in organizations. The Federal Glass Ceiling Commission was created in 1992 out of the Civil Rights Act of 1991 to address the problem of artificial and invisible barriers to women and minorities. The study revealed that the glass ceiling and the exclusion of members of groups that are not white males are detrimental to business success. The report found that quality employees are directly related to the bottom line in business and the profitability of the organization. Barriers are often subtle such as gender stereotyping, lack of experience, and lack of top-level commitment to equal employment opportunity. (Bell *et al*, 2002). These barriers exist around the world as fewer women hold higher ranking jobs. Networking and mentoring are potential solutions to the lack of women in executive positions: 5 % in the U.S. and 6% in industrialized nations (Antol and Izraeli, 1993). Does the Internet help in this effort? We attempt to answer this question below.

CORPORATE CLIMATE AND CAREER ADVANCEMENT

Gender equity benefits men as well as women in the organization, and promotes effective and ethical organizational behavior (Maier, 1997). Corporate climates that promote tolerance, support employee growth and equity, support mentoring and advancement, attract and retain key talent, impact positive public image and company success in the marketplace. Jackson researched advancement opportunities among women in middle management and found barriers that impede women's career advancement to be perception and stereotyping, corporate climate, corporate culture and practices. Her study found that there is a perception that men are better suited for upper level management positions. She found little evidence of women with a specific career path that identified skills and knowledge needed in order to be promoted. Most women felt that their CEO was not committed to the advancement of women. Her study supports the Glass Ceiling Commission recommendations to provide skills and knowledge necessary for senior jobs, challenging assignments for minorities, commitment by the CEO to reduce or remove the barriers to advancement and to recruit and retain high potential women (Jackson, 2001). In ICT this would include: training in hardware and software systems, developing analysis and design skills, teaching managerial skills to women with strong technical backgrounds and then promoting them to project manager positions.

A study based on members of Systers indicates that women enter the computing field but exit or encounter obstacles to advancement in the male culture of technology. The researchers advance three arguments for obstacles to managerial positions in IT. These are educational aspects and family characteristics, corporate cultures and sociological factors. (Lemons and Parzinger, 2001). Trends of women entering and exiting the IT field have resulted in Wright's Controlled Progress Theory to explain why women leave IT more than men due to corporate cultural pressures. (Wright, 1996). A glass ceiling exists in IT based on analysis of the percent of women in high ranking IT positions. Women were in only 7% of the top positions in the 500 leading IT users listed in Information Week. The Society for Information Management reported roughly 14% women. (Lemons and Parzinger, 2001).

STRATEGIES TO BREAK THE GLASS CEILING

Rather than approach breaking the glass ceiling on an individual-by-individual, or company-by-company basis, there needs to be an overall industry commitment that refutes the glass ceiling for the good of the ICT community. Ragins et al found nine career strategies that female executives used to break the glass ceiling in their Catalyst study of national female executives. The five top strategies' key to career success were exceeding performance expectations, a style comfortable for male managers, seeking out challenging assignments, having influential mentors, and networking with influential colleagues. While four of these strategies could apply to anyone seeking to move up the corporate ladder, "seeking a style comfortable for male managers" smacks of subtle gender bias where women may have to adapt a style that may be contrary to their own identity to make male managers "comfortable" in order to get ahead. Ragins study suggests that women perceive the cultural fit and acceptance into the culture as important factors. "In order to meet this challenge, women may expend considerable energy developing impression management strategies to project an image that runs counter to gender role expectations" (Ragins *et al*, 1998). The term *impression management* is defined as "efforts by individuals to improve how they appear to others" (Greenberg and Baron, 2003).

Women in their study mentioned that an important lesson was to mentor, network, and build a team environment with other women. (Ragins *et al*, 1998). Given the small percentage of women in high ranking IT positions and in hard-core computing and engineering jobs in general, this is often difficult, if not impossible. Unfortunately, this reflects the under representation of women in technology education. We have an infinite loop that will only be broken when the culture changes. Women were more likely than men to mention lack of political awareness or ineffective leadership style as holding them back while CEO's responded

137

that lack of general management or line experience, not enough time in the pipeline, male stereotyping and exclusion from informal networks hampered women's advancement.

Meyerson and Fletcher promote the use of incremental changes to impact the corporate culture in order to chip away at barriers that prevent women from advancing. Their study indicated that barriers were subtle, systemic, based on work practices and cultural norms that appear unbiased because they are entrenched in the culture of the workplace. Typical corporate gender initiatives of encouraging women to assimilate, accommodating the unique needs of women, sensitivity training and channeling women into typical female jobs are all ineffectual in shattering the glass ceiling (Meyerson and Fletcher, 2000). Their study emphasized small wins that name the discriminatory practice and subtle assumptions that are tied to the glass ceiling phenomena. This created the possibility of changing cultural patterns and norms to be more inclusive of women. In the companies profiled in their research, the small wins were linked together to contribute and reinforce the larger new system of equity in the cultures studied. This approach helps to fix the culture versus fixing the women in the culture. "It's not the ceiling that's holding women back; it's the whole structure of the organizations in which we work: the foundation, the beams, the walls, the very air (Meyerson and Fletcher, 2000).

An in-depth interview with Pam, a female ICT executive, confirmed some of the points of the preceding study. The interview revealed interesting insights into the technology field as a career choice for women. The interviewee has been in the field since 1976 when she made a transition from teaching high school math to a career in computers. Although most young women were not encouraged to enter a technology field, she was already in a nontraditional area of math, and attended a symposium on using computers in the classroom in 1975. Her 27-year career has spanned many large U.S. and European based companies such as Pirelli Tire, Black & Decker and Unilever. She followed a traditional career path of moving from one company to the next in order to secure progressively more responsible positions in the ICT field. According to Pam, progressive

companies are driven by an inclusive culture that allows women to advance in the field. Others are restrictive where the culture considers men to be more highly technical and promote men into senior positions. Pam described a firm where she was unable to advance into the top position because she was perceived as being less technical than two men who were promoted. The women were perceived as being the better people managers and ran highly successful project teams as project leaders, however the men were promoted even though their teams did not meet deadlines and had disgruntled members. To her and the other females at the company, the promotion of the men sent a message of "you need to be male and a geek in order to get promoted. Women are more people oriented and we aren't getting promoted. The male technical types are. Technical translates to male."

In contrast, she worked at other companies where "there are more women sitting in offices – and not only in the human resource department." In these companies a progressive culture encourages women. This may be due to the fact that a top level IT manager was female as well as other top managers in the company. These firms also had younger managers, and a woman manager of hardware and networking infrastructure.

As Pam stated, "the path was there for me to assume a director position in the department if I wanted it. Women run into roadblocks when the age of top management is over 50 versus firms where the age of top management is under 50. It's not just women at the top, but also a younger generation of managers who do not recognize nor acknowledge the existence of a glass ceiling. Their mothers may have faced a glass ceiling, but not the daughters." Slowly, things are changing in some companies, but it is by no means an industry wide phenomenon.

RECRUITMENT IN THE AGE OF CYBERTECHNOLOGY

Research into employment in the age of cyber technology reveals commonplace topics such as automation, job displacement, the use of expert systems, robotics and the proliferation of virtual workplaces. Much has been written about these issues

and the resulting stress experienced by workers whose jobs have been automated or displaced by the computer. The ethical issues of de-skilling and the social issues surrounding worker alienation are abundant. However, there is little research in the area of the effect of the Internet on job search strategy, and whether technology poses a threat to established patterns of securing employment.

Employers carefully define applicants in order to comply with applicant tracking requirements, Equal Employment Opportunity Commission (EEOC) reporting and as part of affirmative action plans. Companies limit who is considered an applicant by screens such as: current openings, time limits on applications, application for a specific job, those who complete an application form or job screen interviews. The Office of Federal Contract Compliance Programs (OFCCP) has established requirements for who can be considered an applicant. The Internet poses new challenges to this definition as candidates increasingly respond to web sites with job openings. Using electronic media to post available jobs as well as receive applicants has inherent ethical issues around selective response to applicants. For example, it is possible for HR departments to ignore applicants that are obviously male or female – in many instances it is impossible to identify gender by name alone. To prevent the possibility of discrimination when applying online, women may choose either to submit a resume with initials instead of names to avoid gender identification or to totally hide all personal data. Searches by keyword may also disadvantage women who have not emphasized technology on their resumes.

HUMAN RESOURCE RECRUITERS: SURVEY RESULTS

Human resource managers were asked to respond to the following questions in order to assess the impact of technology on recruitment practices as it affects women. Informal interviews were conducted with HR recruiters for high technology positions in the ICT, healthcare, telecommunications and pharmaceutical industries. Executive ICT recruiters in private practice were also surveyed.

- Do you post positions on the web?
- What sites do you use?
- Are web, email and snail mail responses treated differently? How?
- In your opinion, do candidates protect their personal identity when submitting a resume?
- Can you give examples of how someone protected identity when using technology to apply for a job?
- Are women as likely as men to use technology in searching for a job? Why?

All respondents use the web to post positions. Most frequently used sites are Monster, Hotjobs, Ctjobs, CareerBuilder, Flipdog, Execunet, Dice.com and careerboard.com plus specific company web sites. Many recruiters use local sites that are specific to their market or are specific to the type of position they are seeking. Professional sites for engineers, sales/marketing, Finance/ accounting or ICT are frequently used to source candidates. For ICT positions, Dice.com was mentioned as a job specific site. Without networking, however, it may be less likely that one would be aware of the more job specific sites.

Almost all respondents treat email and web based applications differently from snail mail. Only one respondent from the healthcare industry handles paper resumes and applications first. "They are in my face and I can't avoid them – I can let email sit for days, and I am lax about going to our web site to see if anyone has responded to our job postings. It's one more step and I admit I'm not timely and don't take

139

> *All respondents use the web to post positions*

resumes off the site as often as I should." Everyone else not only prefers soft copy – they refuse to handle paper. Some said they ignore paper totally. "Unless their computer is down, there's something wrong if they can't email me a soft copy. I don't want them as an applicant unless they know computer basics."

Overwhelmingly, web and email are considered more convenient. "Email and web responses are easily viewed and if relevant,

forwarded to the hiring manager electronically. Snail mailed responses have to be photocopied and may sit in a pile for several days before they are reviewed or forwarded. "Best to email, unless you are writing to a networked hiring manager who may have a significant interest in your background for someone he or she knows or for her own department or company. Then, it is probably better to email and follow-up with a snail mail copy of your resume and a thank you letter for their consideration."

Some recruiters responded that they treat all applicants similarly because it is against the law to do otherwise – however, those candidates that respond the way they are asked to respond in the ad (either via web site or email) will have a quicker response to their candidacy than someone sending snail mail. One recruiter commented, "It has happened in the past, that the job has been filled before the snail mail applicants' resume hits my desk. But then that's their problem for being so low tech."

Recruiters felt that company sponsored web sites are more trustworthy than open job boards like Monster.com. Safeguards can be taken with open job boards such as using a fake name. Search agents provide anonymity as well. Candidates can enter their criteria and receive email alerts when a job becomes available that matches the criteria. Current employers can be triggered so they are not sent a name and candidates can restrict the companies who receive a resume. Recruiters felt that 70% have name and contact information readily available. The most common reason for protecting identity is to keep the job search private from an employer. One executive ICT recruiter felt that candidates who most frequently hide their identity are those born outside the U.S., particularly the Middle East, who feel that they may be discriminated against. No gender issues were revealed in the responses as to whether candidates protect their identity. A high tech recruiter in the telecommunications industry felt that gender may have been hidden by initials 10–15 years ago, but not today. Examples of other issues of protecting identity exist on resumes where the candidate does not list his/her current employer by name, but instead refers to him/her as 'A major manufacturer of digital office equipment' for example. "As far as

protecting identity, 99.9% put their name, their own address, and phone/cell/email address on their resume. Only 1 of 1000 resumes hid the name of the candidate's employer. It's not professional nor is it necessary."

The response to networking using email or the Internet as an effective job search strategy was overwhelmingly positive. Most felt that 90% of their jobs and clients are as a result of networking. A female recruiter in the Tampa Bay area mentioned that "every temporary on-site assignment I've had (three different assignments ranging from 3–6 months) resulted from networking." Another recruiter contacts well-networked women when she has a job to fill. She consistently starts with the most networked woman she knows with a high tech background who worked at AT&T, Lucent and Octel. She emails her and asks her to forward the email to anyone she knows who may provide a lead for candidates. Email and the Internet make this very efficient and effective as a vehicle for spreading the word quickly about a job opportunity. Most recruiters felt that networking is how they do their business in hiring people for jobs. The Internet made it easier and more efficient. Most felt that people of the same gender network easier because they have a common ground to begin the dialog.

All survey respondents felt that women are as likely as men to use technology when searching for a job if they are comfortable with technology. It was not felt to be a gender issue as much as a technical one. Those comfortable with technology use it to search for a job; those who are not comfortable or not technical will not use technology.

Pam, the IT female executive, feels that younger women are more comfortable with technology than their older female counterparts. She strongly agreed that both genders will be increasingly disadvantaged if they are not comfortable using technology in their career and to find a job. Pam has worked exclusively with a headhunter for the past two decades who has guided her career opportunities and placed her in various positions in IT. He stated that there are many fewer head hunters than 10 years ago, and sees this as a shrinking field due to the accessibility of technology and the Internet. Today, candidates do not need the assistance of a headhunter when they can access the Internet and run their own job search

using easily accessible job boards. Fewer numbers of headhunters means you must know how to use technology to secure a job.

THE FUTURE OF WOMEN AND ICT CAREERS

As computers enter the home and workplace in increasing numbers, we are faced with the necessity to become highly technical "by necessity, not by choice" (Hafner, 2003). People are getting more technically proficient because they have to in order to gain and retain employment, and to utilize broadband connections and inhouse networks. This expertise, according to Hafner, "derives from economic necessity, as livelihoods depend on the technical tools we use. If my computer isn't working, I equate it directly to lost income." The interdependencies that exist with technology in our lives, and the continued proliferation of features with increasing complexity, necessitates a workforce that is increasingly computer literate.

Business organizations will experience increased pressure to value diversity in employment in order to attract a diverse customer base in our increasingly global marketplace. This trend should exploit the talents represented by women and help them gain access to the top positions in organizations. Promotional opportunities for women to break through the glass ceiling in ICT include networking opportunities with other females, mentoring by senior women, assignments that are visible and of high importance, and being technologically competent. Legislation and affirmative action quotas do not easily mandate ethical and equitable treatment regarding assignments and high profile opportunities. As we become increasingly dependent upon technology in our lives, women must have equal access and ability to manipulate technology to advance their careers. In addition, organizations should ensure that their promotional opportunities are open to all who have the potential to advance, not just to those who are skilled at and comfortable with using networking and other impression management strategies. In order to bridge the gender gap and increase CEO awareness to issues facing women, organizations should target high potential women and assign positions that have profit and loss accountability, use objective performance appraisal criteria, assign mentors, and implement flexible policies that encourage work life balance including job sharing and flexible job design programs (Ragins *et al*, 1998). It is only when the perception of the culture changes that women will perceive equal opportunities and equity in hiring and advancement in the ICT field.

REFERENCES

Antal, A and Izraeli, D. A global comparison of women in management: women managers in their homelands and as expatriates, in E. Fagenson (ed) *Women in Management*, Sage Publications, Newbury Park, CA. 52–96, 1993.

A Nation Online: How Americans are expanding their use of the Internet, February 2002. http://www.ntia.doc.gov/ntiahome/cln/anationonline2.pdf

Bell, M, McLaughlin, M. Sequeira, J. Discrimination, harassment, and the glass ceiling: Women executives as change agents. *Journal of Business Ethics*, Dordrecht, Vol 37 no 1. April 2002: 65–76.

Gorniak-Kocikowska, K. and Pakszys, E.B. Women, ICT, values and the future, *proceeding of Ethicomp International conference*, Lisbon, Portugal, 2002.

Greenberg, J. and Baron, R. *Behavior In Organizations* 8th ed. Prentice Hall, Upper Saddle River, NJ, 2003.

Hafner, Katie. *Techies by necessity, not by choice. The New York Times*, July 24, 2003.

Hymowitz, C and Schellhardt, T. The glass ceiling: why women can't seem to break the invisible barrier that blocks them from the top jobs. *The Wall Street Journal*, 03/24/1986

Jackson, Janet Cooper. Women middle managers' perception of the glass ceiling. *Women in Management Review*. 16 (1) 30.

Lemons, M and Parzinger, M. designing women: a qualitative study of the glass ceiling for women in technology. S.A.M. *Advanced Management Journal*, Cincinnati, Spring 2001, vol 66 no 2. 4–11

Maier, M. Gender equity, organizational transformation and challenger, *Journal of Business Ethics,* vol 16 no 9, 943–962.

Margolis, J. and Fisher, A. *Unlocking the clubhouse, women in computing*, The MIT Press, 2002.

Meyerson, D. and Fletcher, J. A modest manifesto for shattering the glass ceiling, *Harvard Business Review* 78(1) 126

Moor, James H.. Towards a theory of privacy for the information age. *Computers and Society,* Vol 27, No. 3 pp. 27–32.

Ragins, B.R. Townsend, B. Mattis. M. Gender gap in the executive suite: CEO's and female executives report on breaking the glass ceiling, the *Academy of management executive*

12(1) 28

Rosser, S. Attracting and retaining women in science and engineering. *Academe*, July-August, 2003, pp. 24–28.

Stepulevage, L. *Gender/technology relation: complicating the gender binary in gender and education*, vol 13, no 3 p 325–338, 2001.

Tech-Savvy: educating girls in the new computer age. American Association of University women, 2000. http://www.aauw.org/2000/techsexecsum.html

Turner, E. (2001) The Case for responsibility of the computing industry to promote equality for women, *Science and Engineering Ethics Journal*, vol 7, no 2, p. 247–260 Opragen Publications.

Turner, Eva, Gendered future of the computer profession, establishing an ethical obligation on the computing educators, *proceeding of Ethicomp International conference*, Lisbon, Portugal, 2002.

Van Oost, E. Making the computer masculine, in Balka E. and Smith, R. (2000) *Women, work and computerization, charting a course to the future*, Kluwer, p.9–16, 2000.

Wright, R. Women in computer work: Controlled progress in a technical occupation. In *Women and Minorities in American Professions*, (ed) Tang and Smith, State University of New York Press, Albany, 1996.

Websites Referenced

Center for Women in Technology http://www.umbc.edu/cwit

American association of University Women http://www.aauw.org/home.html

Women in Technology international http://www.witi.com

Articles Referenced

Chaika, Melissa. Ethical considerations in gender-oriented entertainment technology, *Crossroads*, Association for Computing Machinery, 1999.

Chapman, G. and Rotenberg, M. (1995). The national information infrastructure: a public interest opportunity. In Johnson and Nissenbaum, *Computers, ethics, and social values*. Prentice Hall, Edgewood Cliffs, New Jersey. 628– 644.

Corsun, David and Costen, Wanda. Is the glass ceiling unbreakable?: Habitus, fields, and the stalling of women and minorities in management. *Journal of Management Inquiry.* 10(1), 16–25.

Eck, J. Hale, M Ruff, S Tjelmeland, M. An educator's guide to access issues, Spring 1999 http://lrs.ed.uiuc.edu/wp/access/ende.html.

Franke, G. Crown, D. Spoke, D. Gender differences in ethical perceptions of business practices: a social role theory perspective, *Journal of applied Psychology* 82(6) 920–934.

Gaicquinta, J. Baur, J. Levin, J. *Beyond technology's promise: an examination of children's educational computing at home*. Cambridge University Press, Great Britain, 1993.

Grunner,C. Bennet,D. Clements, M. Hawkins, J. Honey, M. Moeller,B. Gender and technological imagination, presented at the American educational Research Association, Boston, MA, 1990.

Kimmel, M. *The gendered society*. Oxford University Press, New York, 2000.

Luthans, F. Hodgetts, R. and Rosenkrantz, S. (1988). Real managers. Cambridge,MA: Ballinger.

Mainiero, L. Getting anointed for advancement: the case of executive women, *The Academy of Management executive*, Vol VIII (2) 53

Mintzberg, H. (1986). *The nature of managerial work*. New York: Harper and Row.

Moss, Jeremy (2002). Power and the digital divide, *Ethics and Information Technology* Vol. 4 (2) 159–165.

Orpen, Christopher. Dependency as a moderator of the effects of networking behavior on managerial career success. *Journal of Psychology* 130 (93) 245

Powell, G and Butterfield, D.A. Investigating the glass ceiling phenomenon: an empirical study of actual promotions to top management. *Academy of Management Journal* 37 (1) 68–86

Tavani, Herman T. (2004) *Ethics & Technology: ethical issues in an age of information and communication technology*. John Wiley & Sons, Danvers, MA.

Title IX at 30: report Card on Gender Equity: A report of the national coalition for women and girls in education, June 2002. www.ncwge.org

CORRESPONDING AUTHOR

A *Gumbus*
Sacred Heart Univeristy, 5151
Park Avenue, Fairfield,
CT 06825, USA
Email: gumbusa@sacredheart.edu