

## Chapter VII

# Is There a Retention Gap for Women and Minorities? The Case for Moving In Versus Moving Up

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### ABSTRACT

*This chapter will examine the “retention gap” between the goals of gender and racial diversity and the workplace/management behaviors that affect retention of individuals in those groups. Women, as well as African Americans, Hispanic Americans, and Native Americans, are represented in the information technology (IT) workforce in percentages that are far lower than their percentages in the population as a whole.*

*These populations are also under-represented in the educational programs that prepare people for careers as IT workers. While recruiting efforts are crucial for increasing the participation of women and minorities, it is equally important that we retain those already in the IT workforce. It is clear that nothing is gained by bringing women and minorities into the workforce to simply have them drop out or be weeded out. There is a need to deepen our understanding of retention issues for women and minorities in order to inform intervention strategies. This chapter addresses this need by providing an in-depth examination of factors affecting attraction, development, and especially retention of minorities and women in IS.*

## INTRODUCTION

The IS literature devoted to human resource development of IS personnel has examined the “expectation gap” between the needs of industry and academic curricula, and the “recruitment gap” between desired IT skills as expressed by Chief Information Officers versus those articulated by recruiters (Trauth, Farwell, & Lee, 1993). In a similar fashion, this chapter examines the “retention gap” between the espoused goals of gender and racial diversity, and the workplace/management behaviors that affect retention of individuals in those groups. Women, as well as African Americans, Hispanic Americans, and Native Americans, are represented in the information technology (IT) workforce in percentages that are far lower than their percentages in the population as a whole. These populations are also underrepresented in the educational programs that prepare people for careers as IT workers.

While recruiting efforts are crucial for increasing the participation of women and minorities, it is equally important that we retain those already in the IT workforce. It is clear that nothing is gained by bringing women and minorities into the workforce to simply have them drop out or be weeded out. IT recruiters suggest that replacing an IT employee can cost twice his or her salary because hiring a new IT person comes with the inherent recruiting and training costs, and the inevitable downtime during the job change (Reimers, 2001). Turnover rates of 25% to 35% have been reported in Fortune 500 companies during the late 1990s, and this “turnover culture” in IT can hamper the organization’s ability to achieve strategic business goals (Moore & Burke, 2002).

If we are to successfully counter the negative affects of the IT turnover culture, there is a need to deepen our understanding of retention issues for

women and minorities in order to implement effective intervention strategies. The lack of role models and mentors who are knowledgeable about career opportunities, perceptions of computing as a solitary occupation, and images of the “glass ceiling” contribute to the isolation and discontent experienced by these populations. According to a study by the Computing Research Association, many of the issues that discourage minorities are similar to those for women (Freeman & Aspray, 1999). However, we do not make the implicit assumption that the effects of diversity among women and minorities are homogenous (Chambers, Oskamp, & Costanzo, 1995), but experience has shown that sustained and programmatic efforts can make a significant difference for these under-represented groups. This chapter addresses this need by providing an in-depth examination of factors affecting attraction, development, and especially retention of minorities and women in IS.

## **RETENTION ISSUES FOR WOMEN AND MINORITIES<sup>1</sup>**

This chapter begins with an assessment of the relevant literature addressing retention issues for women and minorities. Retention efforts typically focus on retaining employees through innovative compensation and/or benefit packages and attractive working conditions (Educause, 2000). The subjective focus for most of the literature concerning gender, racial, and ethnic retention is within higher education. This literature represents half a century of work seeking to understand the loss and retention of women and minorities in post-secondary educational institutions. Drawing from this literature, we make the argument that the same retention issues that have been seen and noted within higher educational institutions for these populations can also provide very useful conceptual frameworks for understanding the same issues in the IT workplace.

### **Individual and Institutional Perspectives on Post-Secondary Education**

Theories of retention of women and minorities can be seen as falling into two camps: those who look to the individual IT student or worker for the causes of the attrition, and those who look to the institution or organization for the causes of the attrition. Researchers in the first camp tend to argue that a lack

of commitment to the institution, involvement, social integration, and self-motivation are the main reasons for the lower retention rates for women and minorities. Within this camp we find the interactionist-psychological theories such as Astin's (1984) Involvement Theory. Involvement Theory argues that the extent to which an individual invests psychological and physical energy in the institution (i.e., the extent to which they become "involved") is the essential element in persistence.

Woodard, Mallory, and DeLuca (2001) sum up this camp by stating that it "puts forth the idea that persistence is a function of the fit between a student's motivation and academic ability and the institution's academic and social characteristics. Accordingly, the stronger a student's institutional commitment, the more likely that student is to persist" (p. 55).

Braxton, Sullivan, and Johnson (1997) suggest that psychological perspectives might help supplement interactionist frameworks. They explore stress-related coping strategies, and the impact of these coping strategies on the level of social integration, institutional commitment, and the intent to reenroll. Allen (1999) is among the theorists who have explored student motivation as it relates to student persistence. Allen found that while motivation had no impact on academic performance for either minority or non-minority students, motivation did impact persistence for both minorities and non-minorities.

The interactionist-psychological theories, notwithstanding their wide support and use, have been the subject of considerable critique. For instance, Tinto's (1975, 1986) argument that it is best for minority students to draw away from home and pre-college social circles in order to more fully integrate into the institutional milieu has been the subject of criticism (as an example, see Just, 1999), particularly in light of the importance of family and extended social support networks for minority student persistence. Tierney (1999) characterizes as cultural suicide Tinto's (1975, 1986) suggestion that minority students must assimilate into the cultural mainstream to succeed on predominantly white campuses.

In response to the interactionist and psychological theorists, the "critical" camp has emerged. This camp has been dubbed critical due to its systematic critique of the institutional structure and culture at the heart of retention problems. Tierney analyzes systemic institutional barriers to the post-secondary aspirations of students who are members of ethnic minorities. He states that the history of ethnic oppression and discrimination in the United States cannot be simply set aside or ignored, and he offers instead a model for minority

student retention in higher education based on cultural integrity and Bourdieu's (1985) concept of cultural capital.

In both the interactionist-psychological and critical theoretical traditions, we find useful concepts as well as limitations. Researchers in both theoretical traditions have problematized agency, for example. In the case of the interactionists, the institution has no agency or responsibility for the retention of women and minorities. Sole responsibility is placed in the hands of the individual to conform to an institutional set of norms and values. Moreover, these institutional norms and values are neither seen as socially constructed to perpetuate the advantages and privileges that have been traditionally enjoyed by white males nor seen as mutable. The institution is framed as fixed and beyond question, while the applicant is seen as fitting or not fitting within it. In the case of the critical theorists, the institution or organization is infused with agency as it erects barriers to the applicant. The agency of the applicant is summarily ignored and the applicants tend to be treated as victims of a prejudicial and deferential juggernaut. In the first case the institution has no power, motivation, or need to change itself, and in the second the applicant has no power, motivation, or need to change itself. Consequently, both theoretical perspectives provide useful, yet limited, insights into the nature of the underrepresentation of minorities and women in the IT workforce.

Several authors have argued for a third approach that integrates individual and institutional practices and motivations since both components are integral to our understanding of retention issues. For example, Sedlacek and Brooks (1976) identify seven key non-cognitive variables in predicting minority student persistence: ability to understand and deal with racism; positive self-concept; realistic self-appraisal; preference for long-range goals to short-term or immediate needs; availability of strong support person(s); successful leadership experience; and demonstrated community service. Padilla and colleagues (1997) employed qualitative methods to develop a grounded theory of four barriers to minority student persistence: discontinuity barriers, lack-of-nurturing barriers, lack-of-presence barriers, and resource barriers. In both studies, retention problems stem from institutional norms and values, individual beliefs and behaviors, and community circumstances.

This integrated focus on institutions, communities, and individuals has led to the concept of "climate." Climate is defined as the ways in which institutions and communities shape and are shaped by the individual's perceptions and choices. From these climate studies of retention, the importance of the role of mentors has stood out as paramount to stemming dropout rates. In two

separate studies Levine (1995) and O'Connor (1995) identify the importance of a mentor or sponsor or role model in student persistence. Looney (1994) identifies faculty involvement and mentoring as the single greatest factor for increasing the retention rates for minorities, while the amount and structure of funding (particularly the absence of graduate and teaching assistantships) pose the largest problem for minority persistence. With respect to minority students, Lee (1999) suggests that the race of the mentor is irrelevant for an effective mentor-student relationship.

Several authors who examine retention issues from the perspective of climate propose both institutional and individual strategies for alleviating retention issues. Neisler (1992) concludes his exploration of African American persistence by offering a list of institutional strategies to aid in the effort: provide a nurturing comfortable environment to offset internalized out-group status; provide more African American faculty; encourage immediate transition from high school to college; pay attention to the form of financial aid; provide re-entry support; and provide a truly multicultural environment.

Gloria and colleagues (1998) found that social support, university comfort, and self-beliefs all positively impact African American persistence, with the effects of university comfort and social support being strongest among these variables. Hernandez (2000) argues that, "Validating students' desire to succeed and encouraging their optimistic outlook is a central theme for student retention" (p. 581) and that it is important to involve the student's family in the persistence effort (p. 582). Rodriguez, Guido-DiBrito, Torres, and Talbot (2000) identified barriers and enablers to Latina persistence. Barriers include under-preparation, stress from financial issues and social/family obligations, and institutional marginalization. The key factor in enabling and facilitating Latina persistence is the mother's encouragement in the daughter's educational aspirations.

Even though Native American educators report their main problems are largely institutional factors such as funding and the inability to expand programs and services that stem from a lack of funding (Tippeconnic, 1988), various reports and studies have identified Native American student needs and impediments to college success as mostly individually centered problems (Guyette & Heth, 1983; Kirkness & Barnhardt, 1991; McIntosh, 1987). Richardson and Skinner (1991) identified several individual factors that include a strong sense of isolation, and insurmountable cultural barriers. Guyette and Heth (1983) found that Native Americans experienced several barriers such as a general lack of academic preparation and skills, a lack of role models,

financial problems, and negative cultural pressure. Culture shock, lack of motivation, English deficiency, unrealistic career goals, distrust of the institution, and a general lack of support, socialization, and counseling were also identified as salient factors that negatively influence the retention and persistence of Native American students (Richardson & Skinner, 1991; LaCounte, 1987; Wright, 1991).

In a study of the trends in the female proportion of computer science Bachelor's degrees between 1981 and 1991, Camp (1997) noted that enrollments rose 37% during the 1970s through 1984, and then fell 10% over the subsequent 13 years. One key finding was that the type of college (engineering vs. non-engineering) in which the computer science department was located affected this variation, and that gender or individual characteristics alone do not explain these trends. Building on Camp's study, McGrath Cohoon (2001) examined the departmental, institutional, and community factors of the computer science department that help to explain the persistence of women. Her findings indicate that departmental factors such as teaching approach, faculty turnover rates, faculty attitudes towards female students, gender composition of student body, and student mentoring activities assist in the retention rates for female students. Institutional and community environmental factors that facilitate the retention of female students include institutional support of the computer science department and local job market for graduates. This study also found no support for several commonly presumed individual factors such as student quality, ability, and achievement in explaining low female representation in computer science.

Stemming from this literature on retention issues in post-secondary educational institutions, we can gather several useful concepts that can be readily applied to similar problems in the IT workforce. Climate is especially useful for understanding retention issues for women and minority IT workers because it places a focus on both the individual employee and the IT institution, as well as the traditional set of norms and values that have come to be associated with the IT workplace and post-secondary educational institutions. We have cited issues from the research literature related to climate that have special relevance for the IT workforce, including:

1. The need for gender/race/ethnic-appropriate mentors, sponsors, or role models in the work environment.
2. The need for involvement of the family and/or community in support of the work environment.

3. The need for a nurturing work environment to offset internalized out-group status.
4. The need for a truly multicultural work environment that values gender/race/ethnic differences.
5. The need for recognition of and assistance with stress from financial issues and social/family obligations.
6. The need for the eradication of institutional practices that marginalize women and minorities.

## **THE IT WORKFORCE: A PLACE FOR WOMEN AND MINORITIES?**

In this section we draw from the relevant literature that addresses IT workforce diversity and retention issues. In contrast to the literature concerning post-secondary educational student retention, this literature is still developing so it is far more recent and sparse. The majority of the literature focuses on the conditions for women IT workers; however, a growing body of literature sees a commonality between the issues that discourage women and those that discourage minorities (Kvasny & Trauth, forthcoming). Few organizational and managerial studies have attempted to tackle the issue of minority employee retention directly (Nkomo, 1992). According to Cheng (1997, p. 553): “Although women-in-management research has become mainstream, other diversity issues are almost entirely ignored, particularly racism, patriarchy, class, heterosexism, sexuality, sexual identity, religion, postcolonial issues, physical ability, and so on.”

To generalize from the extant literature, there are two main theories as to why women and minorities have not entered or been retained within the IT workplace: biological and psychological nature, and economics and culture. There is also a third, emergent theory—called individual differences—which offers an alternative explanation for women’s participation in the IT workplace.

### **Biological and Psychological Nature**

According to the bio-psychological theory, the physical differences between males and females account for the participation levels of women in IT, implying that women are somehow physically unsuited for the IT profession



(Venakesh & Morris, 2000; Wajcman, 1991). This essentialist perspective has also been applied to minority workers. However, biological concepts are replaced with sociological ones such as assimilation and cultural pluralism. Research emanating from the paradigm of assimilation and cultural pluralism center on the questions of why racial minorities were not becoming incorporated or assimilated into business organizations (Nkomo, 1992). Theories of assimilation are basically individualistic in their orientation, and race is conceptualized as a problem of prejudiced attitudes or personal and cultural inadequacies of racial and ethnic groups. Assimilation theories are posed as a one-way process in which minorities are pressed to change to fit the dominant culture, and research questions tend to be stated in terms of “why minorities are not like us, or how can they become more like us?” This approach is also silent on the historical and social dynamics of capitalistic systems in creating and maintaining inequality in organizations (Nkomo, 1992).

## **Economics and Culture**

Cultural pluralism theories allow for group differences, and are often posed as an alternative to those of assimilation. This approach is often found in the “managing diversity” management literature that calls for the celebration of difference. However, proponents of cultural pluralism still maintain the existence of an allegedly “normal” majority culture. Minority workers, in this discourse, are often described in demeaning terms such as being less likely to have had satisfactory schooling and training, and possessing language, attitude, and cultural problems that prevent them from excelling on the job.

Several theorists assert that a masculinization of the IT workplace has occurred during the past 30 years due to the strong link between economic power and success of technologists. The prominence of the computer’s place in the social and economic horizons has solidified the link between man and machine. Males have made solid their claim of computers as a highly valued resource. Although these authors have made no claim as to this perspective’s application to minority relationships with computers, the implications of this perspective are that those who hold power, typically white (Anglo) males, have claimed the IT industry for themselves and erected boundaries to prevent others from having access to such a valuable resource (Wajcman, 1991; Webster, 1996; Woodfield, 2000).

The social construction perspective posits the development of and maintenance of a masculine and white (Anglo) IT culture that systematically excludes

women and minorities from IT work and all educational and professional steps leading up to IT work (Wajcman, 1991; Adam, Emmys, Green, & Owen, 1994; Hacker, 1981; Hovenden, Robinson, & Davis, 1995; Glastonbury, 1992). Although recognizing that there are no universally male or female cultural traits, the social construction standpoint emphasizes that within the IT workplace, certain cultural characteristics are gathered together in a cultural unit that have come to be seen as “male” and the excluded cultural traits as “female.” Female IT workers are faced with two choices: either to masculinize themselves and ‘fit in,’ or to challenge the cultural system and attempt to feminize the workplace (Hacker, 1981; Sproull, Kiesler, & Zubrow, 1984; Trauth, Nielsen, & Von Hellens, 2000; Von Hellens, Nielsen, & Trauth, 2001).

Henwood (2000) adopts the social constructionist view, and asserts that information technology cannot be understood unproblematically as a neutral tool that can be mastered simply by obtaining the required set of skills. Women are perceived as being somehow deficient, so there is a need for women to ‘catch up’ or ‘fit in’ with men. These deficiencies are assumed to be overcome by offering women the same opportunities as men to acquire some recommended set of technology-related skills. Consequently, recommended interventions promote ‘compensatory strategies’ such as increasing the pipeline of women entering IT careers, making it easier for women to choose IT careers, and promoting a more feminine image of computing. From Henwood’s perspective, there is a need to go beyond attempts to find ways to attract women to information technology. Socio-cultural studies are needed to understand, analyze, and challenge the ways that gender and technology are currently constituted. Researchers also need to question the neutrality of technology, and seek to understand why and how women are excluded from IT education and occupations. Prior research in this area provides useful concepts for addressing recruitment and retention issues.

## **Individual Differences**

A third and emergent theory is positioned between the essentialist and the social construction explanations. Based on a range of gender studies in several countries (Trauth, Nielsen, & Von Hellens, 2000; Von Hellens, Nielsen, & Trauth, 2001; Mitroff, Jacob, & Trauth, 1977; Kwan, Trauther, & Driehaus, 1985; Trauth, 1995, 2000, 2002), Trauth has articulated an individual differences theory to explain the participation rate of women in IT. According to this theoretical perspective, the participation of women in IT can best be explained

by examining the particular characteristics of a woman, and the individual ways in which each woman responds to common socio-cultural influences. Wider applications of this theory to race as well as gender have recently been undertaken (Kvasny & Trauth, forthcoming).

## **Recruitment Issues**

Two recurring themes in the recruitment literature are the belief that women and minority groups perceive a career in the IT workplace negatively, and the perceived lack of technical skills among women and women's negative self perception of their technical skills. For several reasons women and minorities have perceived the IT industry as not having the qualities they require in a job. They have framed the work as difficult, isolated, lacking necessary social interaction, and lacking work family balance. In addition, there is a common perception that the IT industry is a male and a stereotypical "geek and nerd" domain. Fewer women are entering computing courses at the university level, and IT education continues to be represented in a way that discourages girls to participate (Von Hellens, Nielsen, & Trauth, 2001; Joshi & Kuhn, 2001; Kuosa, 2000; Ramanee Peiris, Gregor et al., 2000; Symonds, 2000).

A second common perception is that women are not suited for technical positions. Women are viewed as mostly 'concept' people, and are more interested in the overall view and the wider implications of software and systems in operation rather than the technical details. There is also a perception that a large majority of women underestimate their abilities with regards to IT and computers. These free-floating perceptions deter women from entering IT educational programs and the IT workforce (Von Hellens, Nielsen, & Trauth, 2001; Joshi & Kuhn, 2001).

## **Retention**

While recruitment focuses on attracting women and minorities into IT-related careers, retention concentrates on not only keeping these employees in the organization, but also in their upward mobility within the organizational structure. The retention literature has identified several pertinent factors that include cultural fit, expectation gaps, mentors and role models, career satisfaction and organizational commitment, and role ambiguity and role conflict. IT computing culture has been described as having certain characteristics that are unique to the industry and unique to white male culture. The IT culture is

described as largely white, male-dominated, anti-social, individualistic, competitive, all encompassing, and non-physical. This ascetic culture has strong in-group and out-group dualisms in which the needs of the disembodied intellect subsume emotional, physical, and sensual needs. This dualism translates into expert and non-expert, and to male and female behaviors, attitudes, and values. IT workers are expected to pare-down their non-technical lives, to become tireless pioneers on the technical frontier, and to prioritize work life over all other things. This culture has the potential to exclude women and minorities if they do not conform (Hacker, 1981; Glastonbury, 1992; Sproull, Kiesler, & Zubrow, 1984; Cringley, 1993; Keller, 1990).

Igbaria and Greehaus (1992) suggested that women and minorities are marginalized in promotion, salary raises, termination, and layoffs. These experiences negatively affect stress, performance, productivity, satisfaction, and cohesion while positively increasing turnover rates (Reskin, McBrier, & Kmec, 1999). Many women feel their expectations of their careers and job discretion are not met, and these unmet expectations may produce feelings of unfairness and inequity. Research also suggests that morale and productivity decrease when women don't achieve their expectations (Sumner & Kay, 2001; Sumner & Niederman, 2002). Reskin, McBrier, and Kmec (1999) contend that the sex and race composition in the workplace affects organizations themselves, including their performance, hiring and promotion practices, levels of job segregation, wages, and benefits. However, more research is needed to specifically address the joint effects of race and sex.

Women and minorities tend to have less access to mentors, sponsorship, and role models that can provide the advice and social contacts that are crucial for rising through the corporate ranks. Social support from supervisors and colleagues also helps to minimize turnover intentions among female and minority computer professionals (Lee, 1999; Von Hellens, Nielsen, & Trauth, 2001; Sumner & Kay, 2001; Wajcman, 1998; Lee, 2002). Within the traditional IT culture, a strong value is placed on individualism and pioneering behavior. However, a culture that prizes individual effort may impede the creation of mentoring networks that support female and minority IT employees. In addition, white (Anglo) men have traditionally held the highest ranking and the most privileged positions in IT, but may face difficulty in relating to their female or minority employees. For instance, Ibarra (1992) hypothesized that sex-based conflict is less likely in predominantly male than in mixed-sex settings in which the presence of women constitutes a greater threat to men's prerogatives. Workgroup homogeneity also fosters interpersonal attraction and trust, and

both of these factors positively affect group cohesion (South, Bonjean, Markham, & Corder, 1982).

Job satisfaction is another factor that is often discussed as an affective response to specific aspects of a job, while commitment is an affective response to an entire organization. Women and minorities who have high organizational commitment are likely to stay. Commitment to an organization stems from salary, promotability, job rewards, boundary spanning activities, and long-term employment with a single organization. Successful women tend to be committed to a single organization. Igarria and Greenhaus (1992) found that women and minorities in IT are in generally younger, less educated, lower paid, in lower level positions, and receive less exposure outside their departmental boundaries compared to white (Anglo) men. Moreover, men tend to be motivated by tangible, extrinsic rewards while women tend to be motivated by intangible, intrinsic rewards (Igarria & Greenhaus, 1992; Sumner & Kay, 2001; Baroudi & Igarria, 1995; Igarria, 1995; Williams & Hazer, 1986; Cotton Tuttle, 1986; Cougar, 1988).

Finally, stress generated by role conflict and role ambiguity has been seen to contribute to retention issues in women and minorities in IT. Role conflict occurs when the IT worker is expected to fill multiple social roles that make demands on time, energy, and effort that come into conflict with one another. Role ambiguity is the process by which roles are left undefined while retaining high expectations. Causes for these stressors are organizational restructuring and the lack of sufficient staff and resources, unclear expectations of needs and objectives, and excessive and unrealistic time pressures and deadlines. The development of a time famine and a crisis-based office environment raise anxiety levels and increase stress, perhaps leading to retention issues. The argument is that due to non-work-related social commitments to family and community, women and minorities feel these stressors and anxieties more often and more deeply (Sumner & Kay, 2001; Igarria, 1995; Perlow, Kunda, & Moore, 2000). Women and minorities are also highly visible to members of the majority group. As a consequence of this increased visibility, they are subjected to increased stress that derives from higher performance pressure (Jackson, Thoits, & Taylor, 1995).

## RECOMMENDATIONS

The organizational and post-secondary education literature on women and minorities that is reviewed in this chapter leads us to the understanding that

retention is a multi-sourced problem stemming from cultural, institutional and individual norms and behaviors. In both areas, the culture of the institution is framed as hostile, unchangeable, and the source of barriers to women and minorities who wish to enter them and find success. Also, in both areas, the individual women or minorities tend to be seen as possessing cultural values and behaviors that are seen as antithetical to those desired and rewarded by the institution. It appears that in order for women and minorities to find a comfortable home in the IT workplace, either the IT workplace will have to change its culture, or the women and minorities will be forced to masculinize and Angloize themselves in order to fit in. We advocate a third alternative. Using Trauth's (2002) individual differences theory, we advocate the creation of bridging mechanisms that move the two cultural systems closer to one another. In the remainder of this chapter, we use this bridging perspective to provide recommendations for addressing IT workforce retention issues as they pertain to women and minorities.

Although IT organizations express strong concern with diversity in the workplace, little scholarship is available to guide these efforts. For example, research that examines the intersection of race and gender in IT organizations is largely nonexistent. While gender research is more plentiful, within the women-in-management literature there is an underlying assumption of "womankind" or shared experiences. The universalizing tendency of this perspective is political in its reductionism for it typically emphasizes a single characteristic of gender while ignoring the effects of race, ethnicity, sexuality, and social class on the self-identity of women. Consequently, it gives rise to interventions that fail to deal with the diverse and fragmented nature of women's experiences and needs (Henwood, 2000).

Finally, research that goes beyond black-and-white conceptualizations of race are needed because Hispanic, Asian, and Native American women and men may be different from those of African American and white women and men (Reskin, McBrier, & Kmes, 1999). Researchers tend to adopt the conventional practice of merging Asians, blacks, Native Americans, and Hispanics into single categories such as "nonwhite" or "other." This is also a political act in that it ignores and trivializes the uniqueness of men and women of various racial and ethnic backgrounds. Race is not a biological characteristic; it is the result of the historical construction of racial categories, the shifting meaning of race, and the crucial role of politics and ideology in shaping conceptions of race (Omi & Winant, 1986). Reducing the diverse voices of people of color omits from discussion the voices of nonwhite people as subjects

who engage with IT for a whole range of reasons, and who face unique challenges in the areas of recruitment, retention, and promotion within business organizations.

Assessment and evaluation are critical to any meaningful retention program. However, the empirical nature, efficiency orientation, and historically power-laden practice of assessment understandably gives rise to discomfort on the part of many involved in diversity initiatives (including minority retention) in organizations. Theory that contains a set of interrelated assumptions and principles within a cultural context, and explains factors related to minority and female employee development and persistence, is essential to guiding the evaluation of retention programs. Longitudinal survey data should be used for tracking persistence, and cross-sectional data for monitoring institutional performance (Pavel & Reiser, 1991).

## CONCLUSION

Over the past three years, the IT sector in the United States has experienced a dramatic downturn. We have witnessed declining stock prices, stagnant computer sales, unprecedented layoffs, and the ‘reverse brain drain’ as foreign-born technologists return home. The number of temporary work visas, known as H1-Bs, has dropped from more than 163,000 in 2001 to a projected 90,000 in 2002 (Brown & Kirkpatrick, 1999). Other contributing factors include the decline in the number of American students obtaining IT-related undergraduate and graduate degrees, and the low penetration of broadband technologies in the U.S. compared with other countries. Some industry analysts suggest that these worrisome trends point to growing evidence of a decline in overall U.S. technology dominance. Microsoft strategist Craig Mundie ominously states, “If the U.S. cedes its leadership in IT, there will not be a second chance.” However, “America cannot emerge as a world leader economically, socially, or politically while leaving one-third of our population (African Americans, Latinos, and Native Americans together constitute 30% of the college age population) outside of the profession that is critical to our technological infrastructure, essential to our continued economic growth, and fundamental to the evolution of modern life” (Campbell, 1999).

At a time when the IT industry is experiencing a downturn, little has been said about the impact of these trends on the work experiences of women and minority employees in this industry. We contend that in this volatile business

environment, it becomes increasingly important to discuss the responsibility of the IT industry in addressing gender, ethnic, and racial issues. We suggest that organizational policies and professional codes of ethics should be sensitive, especially with regard to training and professional career development of a diverse IT staff. Exploring the retention issues that exist among women and minorities is crucial for increasing the capacity and diversity of the IT profession (Pantelli, Stack, & Ramsay, 1999). The recommendations for practice and for future research provide insights that can facilitate the development of organizational strategies for changing the power structures that limit women's and minorities' engagement with IT. We can't continue to blame women and minorities for their lack of participation in IT careers, yet continue to expect them to adapt to and compete successfully within alienating systems that might exist in our universities and places of work. While IT training plays a crucial role in attracting women and minorities to IT careers, interventions are also needed to change discriminatory institutional practices that contribute to their low persistence rates. Furthermore, these retention interventions must go beyond the traditional compensatory strategies that seek to increase the participation of women and minorities in IT careers as they are currently constituted. By using socio-cultural approaches that address both individual and institutional barriers, organizations can be more objective and insightful in their assessment of job performance and appointment of promotions; be more understanding, supportive, and nonjudgmental; and become better informed regarding socio-cultural issues that may negatively impact their ability to effectively compete in today's digital global economy. However, none of these efforts will help to diversify high tech unless the industry gets over the afflictions that most impedes progress: silence and denial (Dreyfuss, 1999).

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## ENDNOTE

- <sup>1</sup> Minority status is a social construction, and as such it is subject to great variability. “Minority” in the discussion of minority retention in higher education is sometimes used to refer to disabled, lesbian/gay/bisexual/transgender, or first-generation students. Most commonly, however, “minority” is commonly used to refer to students who are members of ethnic minorities, particularly African American, Hispanic, and Native American students, and not Asian American students (given the high persistence rates of the latter group). Caution should be taken, however, when aggregating any minority. For instance, the success of Japanese Americans in U.S. higher education is very different from that of Vietnamese Americans.