What Do Women Want?: An Investigation of Career Anchors among Women in the IT Workforce

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ABSTRACT

In an attempt to address the underrepresentation of women in the information technology (IT) workforce it is important to understand the values and motivations of female professionals. Hence, the purpose of this paper is to examine career anchors of women in the IT workforce and how these factors are manifested in their careers. In doing so, we examine data from a field study of 92 female IT practitioners. Three important findings resulted from this exploration. First, technical competence and managerial competence are mutually exclusive. Second, a combination of career anchors for a given individual can be found. Third, career anchors vary in terms of temporal characteristics.

Categories and Subject Descriptors

K.7 The Computing Profession; K.4 Computers and Society

General Terms

Management, Human Factors, Theory

Keywords

Career anchors, diversity, gender differences, women, IT workforce, careers of women in IT, IT profession, IT careers, IT professionals, individual differences theory of gender and IT

1. INTRODUCTION

Researchers have argued that traditional models for understanding organizational, social and cultural influences on careers are becoming increasingly problematic [3][12]. They explain that this shift is primarily due to recent changes in the definitions of work, widespread downsizing, shifts in organizational loyalties and the increasingly global nature of the labor force. Marshall and Bonner [12] add that prior organizational research models share a key assumption that "most employees seek natural progressions upward and they want to work for a single, stable employer" (p. 281). Yet the current workplace is characterized by complex job arrangements with highly divergent and diverse career paths. Hence, researchers have begun to embrace organizational theories that account for the dynamic nature of today's workers [3].

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A common organizational theory used to account for these factors is career anchors. Career anchors refer to people's self-perceived talents, values and the evolved sense of motives as it pertains to his or her career [16]. Researchers have argued that determining career anchors of information technology (IT) employees is important because these characteristics influence the selection of and retention in occupations [1][9]. Ramakrishna and Potosky [13] stress that organizations might be able to improve retention of IT employees by matching employee career anchors to their career opportunities.

At the same time, women are underrepresented in the IT workforce. For instance, women accounted for approximately 59 percent of the American labor force in 2004 [23]. Yet, during the same time period they accounted for only 32.4 percent of the IT workforce [10]. In addition, studies have also found that women are more likely than men to leave the IT workforce (e.g. [24]) and are less likely to return [10].

Hence, the purpose of this paper is to investigate career anchors of women in the IT workforce in an effort to better understand factors that contribute to their underrepresentation. This paper is structured as follows. First, we provide a brief overview of literature on career anchors of IT professionals and relate these findings to gender and IT research. Then we present data from a field study of women in the American IT workforce. Finally, we present the contribution of this research to both theory and practice.

2. LITERATURE REVIEW

Schein [15] first introduced the concept of a career anchor as "that element of our self-concept that we will not give up, even if forced to make a difficult choice" (p. 158). Hence, career anchors influence people's career choice and decisions. Schein and DeLong [6] identified multiple career anchor categories, which are described below:

- 1. Technical/Functional Competence The desire for technical activities in order to gain proficiency in a certain area.
- 2. Managerial Competence The desire for managerial activities such as supervising, managing and coordinating the work of others.
- Entrepreneurship/Creativity The desire to create new products or services despite challenges, risks or obstacles.
- 4. Autonomy/Independence The desire to be free of constraints and restrictions in order to pursue managerial or technical competence.

- 5. Service/Dedication The desire to help others and recognize a change for the greater good.
- 6. Challenge/Variety The desire for challenge and the need to overcome difficult obstacles and situations.
- 7. Lifestyle Integration The desire to balance careers with family and personal growth.
- 8. Identity The desire for status and prestige from working at a powerful or prestigious organization.
- 9. Organizational Security The desire for organizational and/or job security in which employees stay faithful to an organization.
- 10. Geographical Security The desire for geographical security in which employees stay faithful to a geographic region.

Researchers have found evidence of career anchors in the IT workforce, although specific findings have been mixed. For instance, Crepeau et al. [4] found that IT employees posses a wide variety of career anchors that are largely independent of each another. They found evidence of all career anchors, but creativity and lifestyle among IT employees. Conversely, Igbaria et al. [9] argued that the majority of IT professionals are either managerially or technically oriented. Their finding conflicts with an earlier finding by Baroudi [2] that few IT employees held a technical orientation. Sumner et al. [19] report slightly different results in that four career anchors were found to be most prevalent among IT employees: creativity, autonomy, identity and variety. Wynne et al. [25] reported that IT professionals in the U.S. Air Force placed importance on job security, service, and lifestyle factors, but did not demonstrate alignment with managerial or technical competence.

Schein [15] originally argued that individuals have a single career anchor that ranks higher than all other anchors. However some researchers have found that employees can have multiple career anchors or a career anchor cluster. Crepeau et al. [4] used component factor analysis to group IT employee career anchors into three main career clusters: 1) "leadership" which includes managerial competence, service/dedication, identity and challenges/variety; 2) "stability" which includes organizational security; and 3) "technical" which includes technical competence. Ferratt et al. [7] found that IT employee career anchors tend to group into three clusters: 1) "security" which includes job security, pay and benefits; 2) "achievement" which includes career development opportunities, specificity of performance requirements, work choice discretion, recognition and social interaction or support; and 3) "flexibility" which includes discretion on work hours, discretion on work location and discretion on travel. Ituma [11] found that IT employees in Nigeria group in six clusters: 1) being stable; 2) being marketable; 3) being challenged; 4) being free; 5) being balanced; and 6) being in-charge.

Researchers have also examined demographic factors in an attempt to reconcile the wide range of findings about career anchors among IT professionals. Igbaria et al. [9] reported that women in their study were more lifestyle oriented and less technically oriented than men. They argued that factors such as age, education level, marital status, tenure in the job, the organization, and the MIS field were not determinate of career

anchor type. Yet, Crook et al. [5] found in their study of over 300 IT personnel, that gender differences were not determinates of career anchors. Instead, men and women equally valued stable careers (organizational security), helping others (service/dedication) and challenges in their careers (challenge/variety).

In summary, the results of over a decade of career anchor studies in the IT workforce have been mixed and no clear consensus has been reached. As a result, Ramakrishna and Potosky [14] argue that additional systematic analyses of career anchors of IT professionals are necessary. Hence, the primary purpose of this paper is to contribute additional insights by examining the role of career anchors in the work histories of women in the American IT workforce.

3. METHODOLOGY

In this research an interpretive epistemology was employed in order to discover the deeper structures of career anchors. This is accomplished by investigating the diverse values and perceptions of career motivations among women in the IT workforce. In doing so, we examined data from a field study conducted by the second author as a part of a multi-year National Science Foundation funded research project. This data consists of transcripts of openended interviews conducted between 2002 and 2006 with 92 women employed in the American IT workforce.¹ The interviews lasted approximately 90 minutes in length and covered a wide range of topics including the participants' personal, educational and professional backgrounds, their interests and motivations, and their experiences working in the IT field. Each interview was recorded and transcribed for subsequent analysis. The participants were assigned pseudonyms in order to ensure confidentiality.

The theoretical foundation of this research is the individual differences theory of gender and IT. This theory articulated by Trauth [20][21][22] takes a hybrid perspective on gender and IT. It rejects claims of inherent gender based difference and it also adds individual influences onto societal explanations for women's relationship to IT. In this sense, the theory investigates common social messages and the variety of ways that individual women receive and react to such messages. The theory argues that part of the explanation for the underrepresentation of women in IT can be explained by the variation across women. Hence, it places focus on differences among women, such as career values and motivations, rather than relying solely on gender stereotypes or societal influences. In this paper we employ the theory to investigate how various background demographics, personal characteristic and societal factors play a role in shaping women's career choices.

The transcripts were analyzed for this paper with selective-coding and open-coding techniques [8][18]. Selective-coding was used to identify constructs from background literature on career anchors coupled with the primary constructs of the individual differences theory of gender and IT. As articulated in Trauth et al. [22] the theory is comprised of three high level constructs including individual identity, individual influences and environmental context. These theoretical constructs were identified during the selective coding process in order to analyze the connection between them and career anchor alignment. Open coding was used in an iterative process to uncover previously unidentified factors about career anchors among women in the IT workforce. The women in this study represent a diversity of demographics, backgrounds and characteristics. The women range in age from 21 to 58 years old with the average age being 41 years old. The women also represent a variety of racial and ethnic identities including European Americans, African Americans, Asian Americans, Hispanics/Latinas and Middle Eastern women. Seventeen of the women are single, 61 of the women are married, 6 are unmarried but in committed relationships, and 8 are divorced and not remarried. Forty of the women do not have children and 52 women have one or more child. Seventy eight of the women identify as heterosexual, 4 women as lesbians, 1 as bisexual and 9 women did not reveal their sexual orientation. The women hold job titles spanning the field of IT work including CIO and upper level managers, programmers/software engineers, project managers, systems integrators, quality assurance engineers, IT administrators, web developers, consultants and small business owners. The women live and work in three geographical areas of the U.S. Thirty-two women interviewed in eastern Massachusetts, 30 in North Carolina (Research Triangle and Charlotte areas) and 30 in central Pennsylvania.

4. FINDINGS

Schein [16] explained that "within any given occupation or career, there are indeed very different kinds of people with different goals, life-styles, talents, and values" (p. 165). In this sense, career anchors do not determine the occupation one enters, but rather are used in career decision processes. As a result, a given occupation can be filled with individuals who represent a variety of career anchors. This is the case among the women included in this study. As an illustration of this, we consider the three most prevalent career anchors (technical competence, managerial competence, and organizational security) and variations among them for the women in this study. The remainder of this section discusses these themes in greater detail.

4.1 Technical Competence

Twenty-eight of the women in this study expressed sentiments aligned with the technical competence career anchor. These women spoke about valuing a career that afforded them opportunities to gain proficiency or to perfect skills in technical areas. The women frequently spoke about their passion for technology as the primary factor motivating their career choice. This theme emerged from examining the individual differences theory of gender and IT construct of personal characteristics (IT identity). For instance. Irene, a 57 year-old business analyst. explained that she first learned to program in a corporate training course and "loved it" so much that she decided to stay in the field. Likewise, Gloria, a 37 year-old IT manager, first took a computer class in high school and loved working with the computer. She then decided to pursue a computer science degree in college. During that time she found that she had a natural ability with programming and felt the subject matter came easy to her. As a result she sought a career in the IT field and now is responsible for computer repair, support and installation.

The majority of women in this study who spoke about technical competence values also discussed several factors important to their technical careers. They spoke at great length about their desire to continue to learn new things. For instance, Miranda, a 54 year-old consultant, sought out a second job teaching IT courses

at night at a local college in order to stay abreast of new technologies. In addition, Julie, a 38 year-old network specialist, spoke in detail about her passion to learn about new technologies. When asked about what personality characteristics correlate with her effectiveness in an IT career she responded:

"Probably my desire to learn. ... I could just research new technologies all the time and try them out and test $[them]^2$ Give me a piece of software and let me use it and I will find the bugs. I love that" [Julie].

Several of the participants also spoke about the feelings of self fulfillment that they gain from careers in the IT workforce. This theme emerged from examining the individual differences theory of gender and IT construct of personal characteristics (self actualization). For instance, Alicia, a 31 year-old network systems engineer, explained that technical work typically has a beginning and an end. She explained that when projects are completed she has a professional sense of achievement. Some women in this study also discussed the need for organization and control that they find satisfied in a technical career. For example, Nancy, a 47 year-old web developer, finds it fulfilling to "take the ultimate disorder and create the ultimate order" with computers. Maureen, a 49 year-old IT operations architect, had a traumatic childhood and felt powerless throughout her life. Yet, an IT career has given her the opportunity to establish authority:

"[Working in IT] is a place where I can get control that a child from a dysfunctional family wants. I can make order. I can put those damn cards in the right order. I can get the syntax perfect. I can run it and have it compile cleanly. There are all of these tidiness control things that are so beautiful about programming and a computer program will not betray you. It does the same damn thing every time" [Maureen].

4.2 Managerial Competence

Eighteen of the women in this study also expressed sentiments aligned with the managerial competence career anchor. Specifically, these women spoke about valuing a career that afforded them the opportunity to supervise, manage, and coordinate the work of others. For instance, Teri, a 42 year-old president and chief executive officer, is responsible for a \$1.3 billion budget and over 14,000 employees and considers herself as living "happily ever after." Other women have not received the professional success of Teri, but still have aspirations to pursue management careers in the IT workforce. For example, when asked about her career aspirations, Mary, a 27 year-old IT specialist, explained that she would like to go into management in order to focus on the bigger picture, rather than just the technical pieces. Megan, a 34 year-old application analyst, who was asked the same question, responded:

"I am really interested in becoming an IT manager or business analyst. I do not think that I want to code for much longer. ... I like the solution piece of IT, but keeping up with the nuts and bolts and all that, I really do not enjoy that" [Megan].

The majority of women in this study who spoke about managerial competence values also discussed several factors important to IT management careers. Several women discussed the need to have both hard and soft skills. In doing so, many women expressed an

interest in understanding and working with IT and other technical aspects of their careers. This theme emerged from examining the individual differences theory of gender and IT construct of personal characteristics (success strategy). For instance, Allison, a 46 year-old project manager, explained:

"I realized that I could be a good IT manager because I have the foundation in management. I have the organizational skills and the communication skills, but I knew I needed to enhance the technical skills. So, I knew it was a good career move to step back [into an engineering position] in order to move forward [into management]" [Allison].

Many women also spoke about their individual strengths in interpersonal and inter-group relationships as a foundation to their managerial competence. This theme emerged from examining the individual differences theory of gender and IT construct of personal characteristics (assertiveness). Kirsten, a 26 year-old IT specialist, felt that her assertive and "take charge" personality lends itself to a leadership position. Likewise Rachel, a 51 year-old chief information officer (CIO), explained:

"I like being a facilitator. I like bringing people together. [I like] getting people to work together [and] helping people find the right place for themselves" [Rachel].

Several of the women spoke about the importance of earning graduate degrees in order to move into management. This theme emerged from examining the individual differences theory of gender and IT construct of personal education (degree level). Sol, a CIO, credits her Master's degree as a mechanism to "keep moving up the IS/MIS ladder." A final personal characteristic raised by the women in this study relates to professional attire. Many of the women spoke about the role of physical appearance in establishing credibility and respect in management positions. This sentiment is illustrated by Mia, 48 year-old CIO:

"I was always very self conscious because everybody looked at how I dressed, what shoes I wore, what handbag I had. It was hard. I was young. I was a woman. I stood out" [Mia]."

4.3 Organizational Security

Sixteen of the women in this study also expressed sentiments aligned with the organizational security career anchor. Specifically, the women spoke about valuing a career that afforded them financial security primarily in the form of salary and benefits. Many of the women pursued a career in the IT workforce because of the industry growth and lucrative pay. This theme emerged from examining the individual differences theory of gender and IT construct of environmental context (view of the IT profession). Grace, a 45 year-old instructional designer, was encouraged by her mother to select a career that could "pay the bills." She looked into IT work and thought it would be a good fit. Likewise, June, a 34 year-old desktop consultant, explained:

"My parents said we are [only] paying for four years of school and I could not become a lawyer in four years. I just said okay, well I want to make a lot of money and so what is the next best thing? And I did the research and the computing industry was the next big booming thing" [June].

This comment was echoed by Karen, a 33 year-old systems engineering manager:

"If I was going to do a desk job, why not take the computer and go into the technology space. It offered more opportunities more financial stability. It was taking off" [Karen].

A few women made career changes into the IT workforce because they felt the job security was enticing. For instance, Rose, a 51 year-old director of IT, left a career in rehabilitation counseling because her future was "financially limited." Amber, a 31 yearold web developer, originally had a career in secondary education, but did not believe she could support her son on a teacher's salary. She knew of the salary that employees in the IT workforce were earning and felt that was where she wanted to be in the long term.

Once employed in the IT workforce, several women spoke about basing their continued career choices on organizational security. For instance, Alice, a 55 year-old project manager, evaluates job opportunities in terms of financial responsibility. She prefers to make career decisions that are more conservative, rather than risky moves that might jeopardize her financial stability. In addition, the individual differences theory of gender and IT construct of environmental context (regional cost of living) influenced career anchor alignment. Lena, a 57 year-old executive vice president of technology, evaluates her career opportunities from an economic perspective. She and her husband live in Boston, Massachusetts and without the salary she makes in the IT workforce, Lena feels her lifestyle would be difficult to maintain.

5. DISCUSSION

In this paper we present the results of an investigation of career anchors among women in the IT workforce. Three important findings resulted from this exploration of women's career anchors. First, technical competence and managerial competence are mutually exclusive; no woman expressed high values for both categories. Megan, a 34 year-old application analyst, illustrated this theme:

"You do not climb a corporate ladder in the IT field unless you want to. And at some point in time when you are in IT you have to decide, do I want to relinquish my technical skills and develop management skills or do I maintain my technical skills, and end up jumping from project to project?" [Megan]

Second, we found a combination of career anchors for a given individual, rather than a single career anchor driving her career. Schein [17] argues that individuals are aligned with a single career anchor category. Yet, women in this study expressed sentiments of more than one career anchor category forming career anchor clusters (or existence of multiple career anchor categories for an individual). The strongest example of this is that many of the women who expressed values of technical and managerial competence also spoke about the value of facing challenges. These women frequently spoke about their desire to overcome difficult obstacles and situations as it relates to the content of their work. A number of women who expressed values of technical competence also spoke to a lesser extent about the value they place on independence and the ability to make decisions over their career. These women spoke about their desires to be free of constraints and restrictions in order to pursue technical competence. Statements about the organizational security career anchor were found among women with both technical and managerial competence values. For instance, Samantha, a 32 year-old instructional designer, described organizational security in the IT workforce as "the cherry on top," but not the only factor influencing her career choice.

Third, career anchors vary in terms of temporal characteristics. Schein [17] argues that once an individual establishes a career anchor, that anchor is unlikely to shift during her career. This argument held true in our analysis with regard to technical and managerial competence. Throughout the majority of the women's life stories these values appear to be fairly constant. With regard to technical competence, women in this study typically discuss values and motivations related to this career anchor beginning at an early age (i.e. during secondary or post secondary education). This early appearance may be due to early exposure to IT in schools and the home. On the other hand, women typically express values of the managerial competence later in their careers (i.e. once they had experiences as managers or the ability to move up in their careers). Thus, even though women remain aligned with either technical or managerial competence, what varies is the point in their career this alignment is realized.

On the other hand, some career anchors did not hold constant throughout a woman's career history. Lifestyle factors, or the desire to balance life and work, are occasionally discussed by women with young children, but become less of a focus as their children age. For example, Sylvia, a 58 year-old director of technology services, explained that for a number of years she valued a career that allowed her to balance work and life in order to care for her young children. Yet, when they reached an older age she was back on a focused career track and did not place as much importance on work-life balance issues. Also, the women who expressed values about being faithful to a geographic region typically had children in secondary education and were not willing to move them at that point in time.

6. CONCLUSION

In this paper we investigated the career anchors that emerged from an investigation of women's career histories. Three important findings resulted from this exploration. First, technical competence and managerial competence career anchors are mutually exclusive. Second, contrary to Schein's proposition, a combination of multiple career anchors for a given individual can be found. Third, career anchors vary in terms of temporal characteristics. These findings make a strong case for considering the variation among employees in the IT workforce, which is the argument underlying the individual difference theory of gender and IT. We intend to continue our investigation by administering a survey instrument partially based on the Career Orientations Inventory (COI) developed by DeLong [6]. On going research efforts will contribute to a more nuanced view of gender and the multiple identities of women in the global IT workforce.

7. ACKNOWLEDGMENTS

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8. ENDNOTES

¹ The 92 interviews represent a subset of female practitioners in the research project. This paper does not report on the additional 31 interviews with female academics also included in the study.

 2 In this paper we adopt the common convention of placing words in brackets that have been inserted by the authors to clarify the meaning of an interview excerpt.

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