An Agenda for Research on Gender Diversity in the Global Information Economy

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INTRODUCTION

There has been considerable interest of late in the topic of diversity in the IT field. This topic engages the spectrum of IT stakeholders from academics to funding agencies to industry groups to practitioners. Academic research on diversity has appeared in special issues of journals such as *Information Technology and People* (Adam, Howcroft & Richardson, 2002) and has become a conference theme for ACM SIGMIS CPR (Trauth, 2003) and IFIP 8.2 (Trauth, Howcroft, Fitzgerald, Butler, & DeGross, 2006). In the United States the National Science Foundation has funded gender research under the rubrics of the IT Workforce (ITWF), Broader Participation (BP), and Science Technology Engineering and Mathematics (STEM) funding streams. Industry groups such as the Information Technology Association of America (ITAA) have sponsored conferences dealing with diversity. Perusal of corporate Web sites gives evidence of the incorporation of diversity goals into corporate policy.

The focus of attention—whether from a practitioner or an academic perspective—is generally about how to achieve greater diversity in the IT labor force. A significant component of this diversity quest is the recruitment and retention of women in the IT field. Underlying this discourse, however, is the assumption that we currently possess the conceptual tools to understand the reasons for the lack of gender diversity in the IT field and that we know how to apply this knowledge to the task of redressing this situation. However, there are some of us who would challenge these unexamined assumptions. We would argue that part of the reason for the underrepresentation of women in the IT field is the absence of a sufficient examination of these assumptions. This, in turn, suggests a need for theoretical innovation along with the application of interventions.

In response to this need, a research program has been established at the Center for the Information Society at The Pennsylvania State University. Housed in the College of Information Sciences and Technology, this research program has both theoretical and application goals. The theoretical goal is to broaden the theory base used to understand the underrepresentation of women in the IT field. The application goals are to translate this understanding into public and corporate policy, and curricular interventions. The remainder of this article presents an overview of a research agenda for gender diversity and the IT sector that was established in order to respond in a meaningful and productive manner to the diversity challenges and opportunities being presented to the 21st century IT labor force.

THEORETICAL STANCE

The objective of this research agenda is to develop theoretical tools that help us uncover the meaning behind the statistics about the underrepresentation of women in the IT workforce. It is being achieved by focusing attention on the differences among women, that is, the variation that exists within a gender group rather than across the two gender groups. In doing so, this approach stands in contrast to the body of gender and IT research which focuses attention on the differences between men and women. The motivation for adopting this theoretical perspective arises from the awareness that gender roles, expectations, and stereotypes regarding women’s involvement with information technology vary significantly when factors such as nationality, race, age, sexual orientation, marital status, socioeconomic status, and education level are taken into account. To date, data from Australia, Ireland, New Zealand, and the U.S. are being used to articulate and empirically test a theory of individual differ-
An Agenda for Research on Gender Diversity in the Global Information Economy

ences to explain the underrepresentation of women in the IT workforce.

The contribution of the Individual Differences Theory of Gender and IT is that it focuses on differences among women in the ways they experience and respond to characteristics of IT work, the IT workplace, and societal messages about women and IT. The goal of this research is to engage in field-based theory refinement by examining the particular ways that female IT professionals are influenced by and react to the social shaping of both gender identity and IT.

DIVERSITY RESEARCH AGENDA

Elsewhere in this Encyclopedia the Individual Differences Theory of Gender and IT is discussed in greater specificity as are details about the theory testing research that has been conducted to date. The purpose of the discussion here is to provide an overview of the research agenda and how it is being enacted.

Field Studies of Gender and IT

Field studies have been conducted in several countries in order to further develop and conceptually test the Theory of Individual Differences as it relates to IT and gender. The purpose of these studies is threefold: (1) to identify characteristics associated with women who have successfully negotiated the IT field, (2) to deepen our understanding of environmental influences on female participation in IT, and (3) to document the variation in definition of male/female competencies, men’s work, women’s work, and women’s responses to generalized societal messages about the IT field as a male domain.

The earliest study in this research program on gender and IT was conducted in Ireland between 1989 and 1999 as part of a larger study of socio-cultural influences in the development of Ireland’s IT sector.1 In that study, gender was not the specific focus of the attention; it was but one of a number of socio-cultural factors being explored (Trauth, 1995, 2000). A subsequent research project, which began in 2003, is investigating the impact of Ireland’s information sector on Irish society. In this research, a study of women in the IT sector is an explicit component.2 Here, the focus is on ways in which the position of women has changed as the information economy has become more central to Ireland’s overall economic development (Trauth, 2004).

A third research project was undertaken in Australia and New Zealand in 2000. The focus of this study is on understanding how women negotiate the largely male domain of the information technology profession. A particular emphasis of this study is the influence of race, ethnicity, nationality, and culture on a woman’s development as an IT professional (Kvasny & Trauth, 2002; Nielson, von Hellens, Beekjuyzen, & Trauth, 2003; Trauth, Nielsen, & von Hellens, 2000, 2003; von Hellens, Nielsen, & Trauth, 2001).3 It was in the course of conducting this research that the theoretical perspective of individual differences was first explicitly articulated (Trauth, 2002).

Research in the United States began in 2002 with a multi-year investigation of women in the American IT workforce.4 The purpose of this research is to empirically refine and test the Individual Differences Theory of Gender and IT (Morgan, Quesenberry, & Trauth, 2004; Quesenberry & Trauth, 2005; Quesenberry et al., 2004; Quesenberry, Trauth, & Morgan, 2006; Trauth, Huang, Morgan, Quesenberry, & Yeo, 2005a; Trauth & Quesenberry, 2005, in press; Trauth, Quesenberry, & Morgan, 2004; Trauth, Quesenberry, & Yeo, 2005b).

Research Methods

While a consistent research methodology and theoretical perspective have been employed in all of these gender studies, the epistemological underpinning has evolved as this research agenda has progressed. Qualitative methods have been employed in each of the projects. This consists of open-ended interviews that are complemented by participant observation and document analysis. The interviews are focused around the life histories of the participants. That is, women IT professionals are asked to describe their educational and career journeys that brought them to their current position in the IT field. These interviews draw from a script but are quite open-ended in structure. They typically last 90 minutes in duration and are recorded for later transcription and analysis.
An Agenda for Research on Gender Diversity in the Global Information Economy

Since the theoretical lens for this research is directed toward a better understanding of variation in receipt of societal messages and individual responses to them, this research has sought to explore the varied individual and environmental influences on women working in the IT profession. Hence the interview questions probe regional cultural influences, as well as varied individual experiences and influences.

At the outset, the epistemological orientation was completely interpretive. It was chosen over the dominant epistemology—positivism—because the objective was not to conduct hypothesis testing of established constructs. Rather, this research sought to articulate the emergent constructs of the Individual Differences Theory by developing a better understanding of the influences on women in the enactment of their careers. This was pursued by exploring the manifestation of individual differences in the women’s work-life narratives. However, as this research agenda has proceeded, more recent projects have moved toward a critical epistemological orientation. As this has occurred, the focus has shifted from an exclusive emphasis on the woman’s subjective representation of her career history to her reflection upon (and the researchers’ critical analysis of) contradictions, and the role of external forces and power relations in shaping her decisions and behaviors (Howcroft & Trauth, 2004; Kvasny, Greenhill, & Trauth, 2005).

Future Research

Future work in this research agenda will involve further empirical testing of the various constructs of the Individual Differences Theory drawn from the interview data sets. It will also involve more extensive data collection methods such as survey research. Whereas the research, to date, has focused on women at one end of the career pathway—those who are already in the labor force—future work will also extend the examination of individual differences in relation to information technology to secondary school and university women students. The Theory of Individual Differences is also being applied to a study of masculinity and femininity in IT adoption. Finally, this research is becoming incorporated in an investigation of the role of human diversity in the development of a knowledge economy.

In addition to this work, four doctoral candidates are exploring gender diversity in IT in their own dissertation research. Jeria Quesenberry is employing the Individual Differences Theory of Gender and IT in an extension study of the underrepresentation of women in the IT profession. The objective of this study is to more deeply investigate the role of organizational factors in the underrepresentation of women in the IT profession in order to further test some of the constructs in the theory. Haiyan Huang is investigating methods for coping with gender as a feature of cultural diversity when engaging in global, virtual IT development. As part of this research she is examining cross-cultural influences on gender and their implications for work teams. Allison Morgan is employing the Individual Differences Theory of Gender and IT in a study of Web search capabilities of diverse individuals. The objective of this study is to better understand how greater attention given to the diversity of individuals can influence system design in order to overcome the digital divide. Benjamin Yeo is exploring the theme of social exclusion based upon gender as part of his study of socio-cultural factors influencing the development of sustainable knowledge economies in several countries.

CONCLUSION

At the heart of this research agenda on the underrepresentation of women in the IT profession is the recognition that the IT sector is global in nature. Hence, national characteristics, geography, economy, cultural factors, race, and ethnicity must also be taken into consideration when attempting to explain the relationship between gender and information technology. The initial work in this research program emanated from the effort to understand gender as one of a number of socio-cultural factors influencing the development of a nation’s information sector. This global perspective has remained an essential feature of our research agenda. The twenty-first century is witnessing greater global dispersion of the IT sector. Therefore, it is fitting, we believe, for a U.S.-based research program to develop an understanding of gender and IT within the context of a better understanding of the global information economy.
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An Agenda for Research on Gender Diversity in the Global Information Economy

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ENDNOTES

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2 This research was supported by a grant from Science Foundation Ireland.
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