AIS Women's Network: Advancing Women in IS Academia

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Abstract:

This paper highlights the efforts to support female academics in the information systems (IS) discipline over recent years. The development of the AIS task force on women in IS and the formation of the AIS Women's Network have been significant initiatives to get the conversation started, yet much work remains. Findings from three separate events (an AIS- and Elsevier Foundation-sponsored survey, a pre-ICIS workshop panel update on the state of current research in the area of women and IS, and an in-depth discussion between workshop attendees at the 2015 AISWN Pre-ICIS Workshop on Advancing Women in IS), clearly indicate issues remain. Therefore, we also develop an agenda for future work to help advance women in the IS discipline.

Keywords: Women in Academia | Gender | Gender Bias | Discrimination | Diversity | Promoting Women | Feminism

Article:

1. Introduction

The number of women in information systems (IS) has been declining for over twenty-five years, and this decrease exceeds that found in other STEM disciplines such as math and the sciences (Dubow 2010; Loiacono et al. 2013; Ramsey & McCorduck, 2005). In the academic community, this disparity has manifested in a significantly lower percentage of women journal editorships, the underrepresentation of women on conference panels and committees, and their absence in top-tier IS journal publications (Lamp 2007) even though women make up approximately 25 percent of the IS discipline (and approximately 29% of the AIS). Adding to the problem is the perception by some in the IS community that there is no problem. In fact, in 2012, the need for the International Conference on Information Systems (ICIS) women's

breakfast1, a long-standing support vehicle for women networking in the IS academic community, was called into question. This resulted in a panel discussion at ICIS 2012 (Loiacono et al. 2013) that firmly established the criticality and need for a strong, independent network and support group for IS women.

To better support and grow the numbers of women in the IS discipline, we need to uncover and understand the challenges that prevent women from entering and remaining in IS academia. Only then can we develop viable, practical solutions to help solve these problems. Attempts have begun to address some of the difficulties that women AIS members have identified (Loiacono et al. 2013).

Several strategies have already appeared to better understand these difficulties and to support women IS colleagues: the Association for Information Systems (AIS) women in IS task force, the AIS Women's Network (AISWN) College, deliberate networking events at AIS conferences, a survey, and a pre-ICIS workshop on advancing women in IS.
In August 2013, the AIS women in IS task force was established. Members2 of the task force spanned all three regions represented by AIS and included doctoral students and faculty at differing ranks from both genders. The taskforce determined it necessary to reach out to women in IS through systematically assessing the current status of women in IS globally. One of its objectives was to examine the challenges that women in IS academia (both doctoral students and faculty) face and implement mechanisms to aid their advancement. Through this taskforce, the AISWN college3 was established alongside the senior scholar's college, with initiatives including a mentoring program and a website for year-round member communication. Another initiative was a deliberate attempt to host regular networking events at conferences such as the Americas Conference on Information Systems (AMCIS), European Conference on Information Systems (ECIS), Hawaii International Conference on System Sciences (HICSS), and Australian Conference on Information Systems (ACIS).

An Elsevier Foundation grant obtained through efforts of task force members and a smaller grant from the AIS made another initiative—a survey—possible. Specifically, the survey asked both men and women in IS academia, including doctoral students and faculty, to determine the factors that impact career growth in IS and how AIS might help them in their path. Thus, one part of the study focused on women in IS academia, and the other examined activities that AIS could plan to enhance professional growth across genders. The Elsevier Foundation grant also helped establish a pre-ICIS workshop on advancing women in IS that further explored the survey's results. Its organizers planned the workshop format in a way to provide a forum to develop greater engagement in the academic community and put additional efforts into addressing the "messy" issues (e.g., work-life balance, childcare, and gender bias) that often cause women to disengage from the community. Such a forum over time could help produce longitudinal strategies and research efforts that help in retaining and enhancing the career satisfaction of women in IS.

This paper proceeds as follows. In Sections 2, we present the survey and its results, which set the stage for the pre-ICIS workshop. In Section 3, we highlight the details of the workshop. We also discuss the panel presentations and participant discussion results. In Section 4, we conclude by highlighting what has been accomplished for women in IS so far and what work remains. We also set a future agenda to help guide the remaining work.

2. Survey

The AIS women in IS task force chose a survey method to gather timely information about women in IS academia. Based on studies of women in the private sector IT (e.g., Ahuja, 2002; Trauth, Quesenberry, & Huang, 2009), the task force identified relevant topics for the survey (e.g., work-life balance). The task force also included additional topics unique to academia (e.g., tenure). The task force developed the survey in spring 2014, and experts from the task force and members of AIS council vetted it. The task force conducted pilot tests to ensure that questions were worded appropriately and all groups were well represented (i.e., by rank, role, and region). After incorporating feedback from the pilot study, the final instrument was completed and data collection began in May 2014. The task force obtained institutional review board approval before it began collecting final data. The survey included demographic questions, questions that required respondents to choose their answer on a Likert-type scale, and some open-ended questions to obtain rich data and further clarify the objective measures. The following statements provided an introduction to the survey instrument and its purpose:

You are invited to participate in a research project, sponsored by the Elsevier Foundation and the Association of Information Systems, which is investigating the factors that impact career growth in IS and how AIS might address those issues. One part of the study focuses on women in IS academia and the other examines activities that can be planned to enhance professional growth across genders. You will be asked to answer several questions about yourself, including some demographic information, and your university. Your participation in this research will be most helpful in understanding the issues that women in IS face.

The task force distributed the survey through the AIS listserv and IS Women's Network. The task force contacted AIS regional representatives and asked them to encourage their members to complete the survey to ensure global representation.

3. Results

In total, 211 individuals (80 or 37.91% of whom were female) replied. This response rate is higher than the proportion of the number of women in the IS discipline; the best figures we could source from AIS membership indicate approximately 29 percent female members. These numbers are also consistent with the percentage of women in the IT workforce, which hovers around 30 percent (Ramsey & McCorduck, 2005). Fifty-three percent of the respondents taught at schools in North America compared to the number that taught at schools in Australasia (19%), Africa (1%), Europe (22%), the Middle East (3%), and South America (2%). Respondents, both male and female, indicated a similar level of research activity and service to the community4 (mean: men = 3.82; women = 3.95). Similarly, men and women reported that they were relatively active in terms of service to their community (mean: men = 3.77; women = 3.88). Neither measure was statistically significant between the groups. The key themes from the survey were tenure, work-life balance, mentoring, and careers, which we discuss below.

In terms of tenure, the same percentage of women and men respondents (around 58%) reported receiving tenure. Focusing a bit deeper at the level of rank, we found gender differences between

assistants, associates, and full professors. Though a similar number of women (22%) and men (28%) were assistant professors, the number of associate and full professors differed (see Figure 1). Fifty-four percent of women were associate professors compared to 30 percent of men. Conversely, 42 percent of men were full professor compared to 24 percent of women (see Figure 2). These numbers are also consistent with previous research, which highlights that a greater number of men become full professor compared to women (Mason, Wolfinger, & Goulden, 2013). However, we need to collect more data to conduct further, deeper levels of analysis.
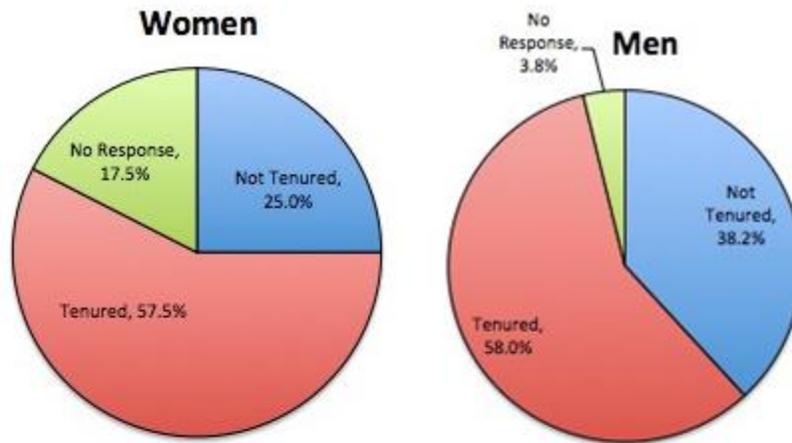

Figure 1. Respondents by Gender & Tenure
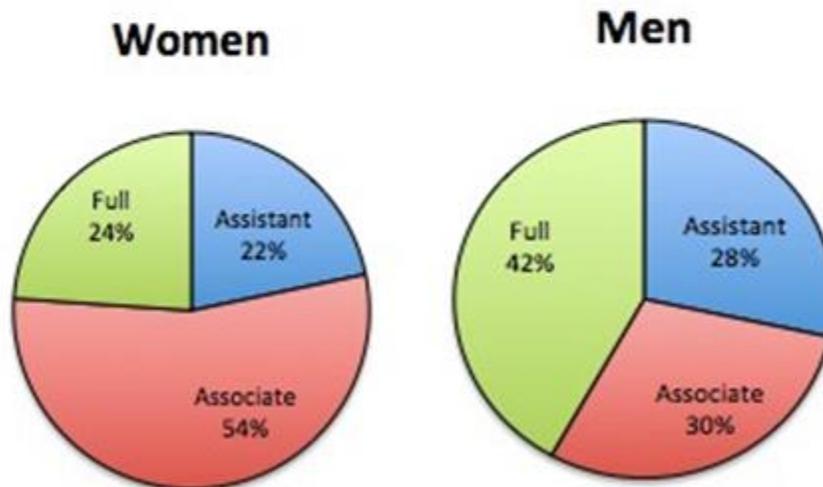
Figure 2. Respondents by Gender & Rank

Turning to the level of support provided to faculty for work-life balance, respondents reported that their institutions had several family-friendly policies to support faculty (see Figure 3). In answering "What kinds of policies does your university have related to women or family friendliness?", the top benefits that the respondents mentioned were maternity and paternity

leave, diversity hiring practices, and mentoring for junior faculty. What is interesting is that more men (as a percentage of the total male respondents) indicated the availability of family-friendly policies as compared to women (as a percentage of the total female respondents). Is it that men actually have more family friendly policies at their institutions or are men simply more aware of the policies than their female counterparts? Or could it be that, while family- friendly policies exist, women do not widely use them or consider them to be inadequate? For example, though there may be a general understanding that an institution provides mentoring, the institution may not have a formal program or structured way of helping junior faculty connect with a mentor. Therefore, some may not consider it a true policy. However, these results, though interesting, do not tell us the underlying cause for the difference in perceptions and any explanation would be simply speculation. Clearly, we need further investigation into this area.

With regard to mentoring, research has shown that women academics who are mentored are more likely to be promoted (Coogan & Chen, 2007; Fouad & Carter, 1992; Gardiner, Tiggemann, Kearns, & Marshall, 2007; Knox & McGovern, 1988). In our sample, both men and women seemed to equally use mentoring because approximately half of each group responded that they did have a mentor (50% women and 53% men). Given the personal (Allen, Eby, Poteet, Lentz, & Lima, 2004) and organizational benefits of mentoring (Wilson & Elman, 1990), it is unfortunate that more respondents of either gender did not have a mentor.
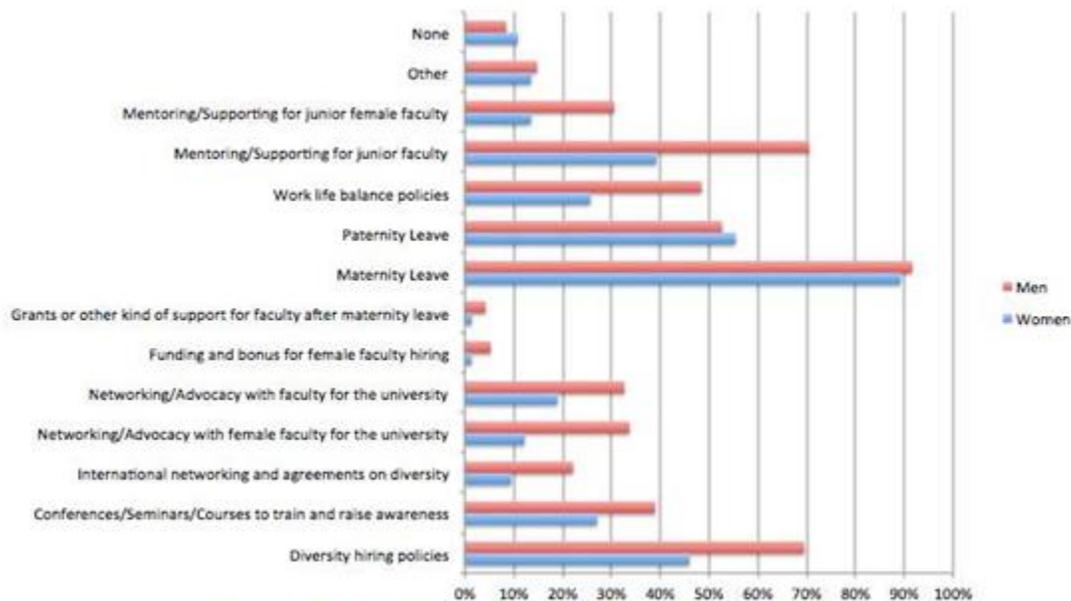
Figure 3. Availability of Gender & Family Friendly Policies

The most interesting results of the survey centered on the impact gender seems to have on career choices and people's perceptions of the future of a career in IS. Over a third of the women surveyed (39%) stated that gender was a factor in their career choice (Figure 4). Conversely, only six percent of men said it was a factor in their career decision, which is a significant difference (F-test = 44.897, p-value = .000). Women respondents felt that there were more challenges in their careers than their male counterparts as well. Only in terms of partner expectations did men find it more difficult than

women (based on five-point Likert scale (1 = strongly disagree; 5= strongly agree)) to stay focused on their careers. However, the number of responses from males (only 8) on this section made statistical comparisons difficult (see Figure 5).
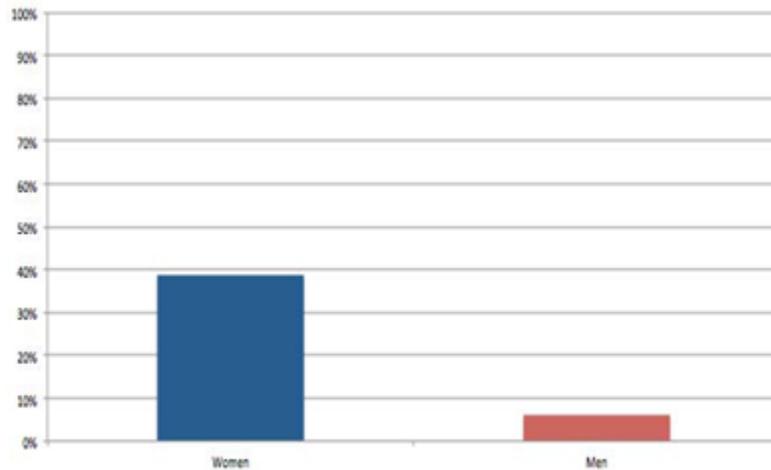
Figure 4. Gender Influence on Career Choice
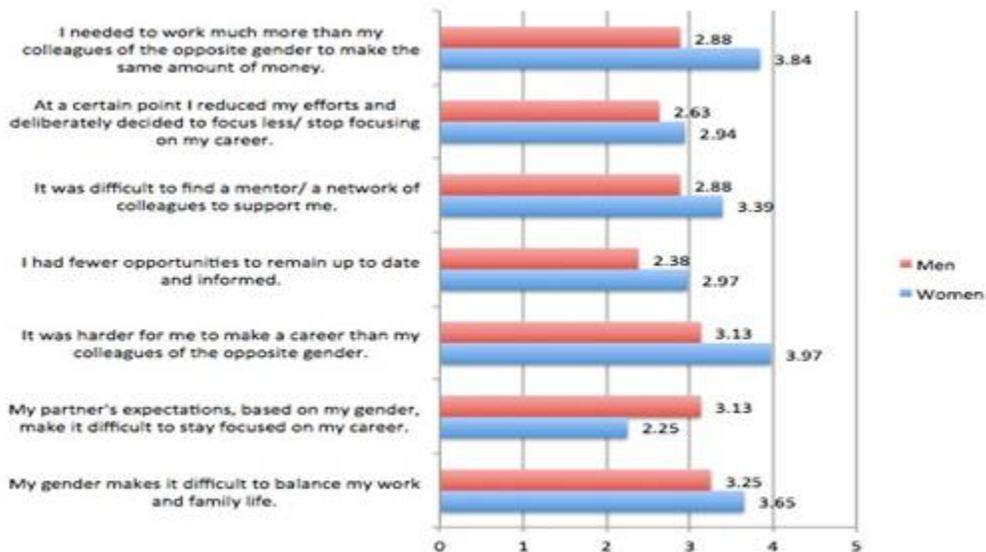
Figure 5. Gender & Career-Life Balance

Respondents also differed in their perceptions of IS as a career path. Looking at the IS career path in general, men and women respondents were both somewhat optimistic (hovering slightly above 3.5 out of 5 on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree)). Male and female respondents were similar in their expectations of IS as a career path in general (male = 3.60; female = 3.53) and for women (male = 3.70; female = 3.43). However, in terms of their perceptions of what the future held for an IS career for men, they differed greatly. Women (4.06) were significantly more optimistic about the future for men in the IS discipline as compared to their male colleagues (3.72) (F-test = 7.043, p = .009).
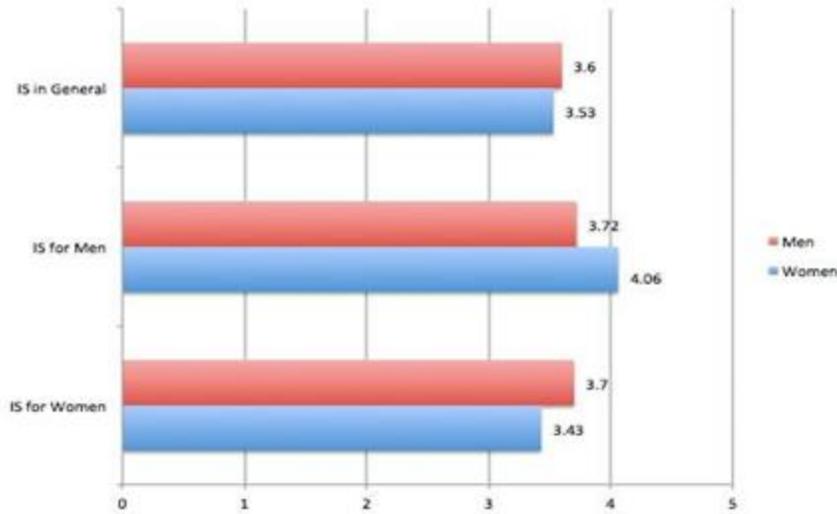
Figure 6. Gender & Optimism in IS Career Path

When asked what they found to be the most challenging thing about working and studying in the IS discipline, both men and women mentioned research and the discipline's fast-paced, always changing nature. The word clouds in Figure 7 represent the comments that men and women mentioned in response to the open-ended questions. Interestingly, both men and women also voiced concerns related to the credibility or lack thereof that the IS discipline receives from other academic business disciplines. So, though men and women differed in many areas, they agreed on others, such as the importance of research and the changing nature of our discipline.

Men   Women
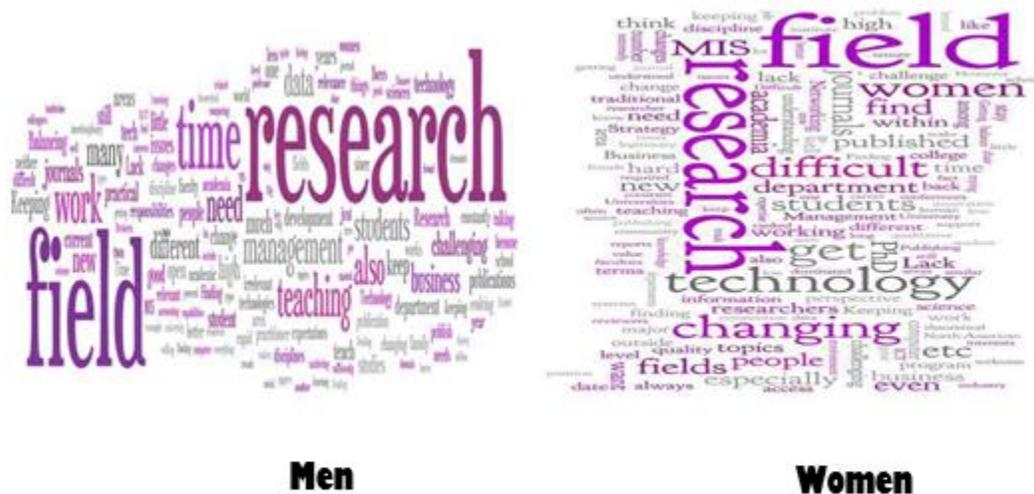
Figure 7. Gender & Challenges Faced in the IS Field

Overall, the survey revealed differences between men and women's perceptions of the resources they receive from their universities, their ranks and tenure, and the impact that gender has on their careers. Women viewed gender as a greater influencer (over six times greater; see Figure 4)

on their career choice than men did. Additionally, the findings confirms previous research that highlights the low levels of women who are full professors (Damast 2011).

4. Pre-ICIS Workshop: "Advancing Women In IS"

The results of the survey above set the stage for the first IS Women's Network workshop, "Advancing Women in IS", held on December 13, 2014, in Auckland, New Zealand. It was important to more fully understand the issues that surfaced in the survey and to provide workshop attendees the opportunity to speak about other challenges they face. Hence, its organizers structured the workshop to dig deeper into the issues women face as IS academics (e.g., tenure, work-life balance).

Organizers developed a full-day workshop around a key theme: understanding where we are. Where are we in terms of research on women in IS? What did we glean from the survey results? What are the issues that the women attending the workshop see as most challenging to their success? How can women obtain more visibility (e.g., top-tier journal publications, editorships, and conference panels)?

Since Elsevier Foundation grant supported the workshop, several attendees received stipends to ensure a diverse group of women would be present to contribute to the discussion. Over 30 participants attended, and they included women from North America, Europe, Asia, Australia, and the Caribbean. Participants varied in whether they were a senior scholar, a mid-career scholar, a new scholar, or a doctoral student.

Before participants discussed the issues that they saw as relevant to their career, the organizers ensured that everyone understood what research in gender and IS has been conducted (from the panel) and how those in the IS academic community felt about gender issues (from the survey). The combination of these two informative sessions set the stage for a deeper, more informed discussion. Finally, since previous re- search has already identified the lack of women in the higher ranks of journal editorships and authorships (Lamp 2007), the organizers convened a panel of available editor-in-chiefs of top IS journals to help identify how attendees could get more involved in journal editing and publishing.

4.1 Research Panel: State of Current Research in the Area of Women and IS
After the introduction to the workshop, logo5 (see Figure 8), and survey results, a three-person research panel of highly recognized researchers (Annemieke Craig, Jenine Beekhuyzen, and Deb Armstrong) reported on the current state of research on women in IS. Annemieke kicked off the panel discussion by addressing why gender in IS matters. Jenine continued the panel conversation with advancing women in IS academics. Finally, Deb concluded the panel by focusing on the research that had been done on women in the information technology profession. Lakshmi Iyer moderated the event.

Figure 8. The new AISWN Logo

4.2 Annemieke Craig

Much research indicates that, collectively, a team can achieve more together then if the members work alone. Equally, if the members of the team are diverse in terms of "skill set, education, work experiences, perspectives on a problem, cultural orientation and so forth" (Nelson, 2014, p. 86), then the potential for innovation is higher than if the members were homogeneous.

Of the diversity indicators, one that should be relatively easy to measure is that of gender. As men make up 50.4 percent of the world's population (UNESCO, 2012), we can expect that any representative group would include approximately half men and half women. Put simply: diverse teams make better decisions. Indeed, Dezso and Ross (2011), in studying the effect of gender diversity on the top firms in Standard & Poor's Composite 1500 list (a group designed to reflect the overall U.S. equity market), found as much. More specifically, in examining the size, gender composition and financial performance of firms' top management teams from 1992 through 2006, they found that, on average, "female representation in top management leads to an increase of [US]$42 million in firm value". They also found that a greater emphasis on innovation leads to greater financial gains when women were part of the top leadership ranks.

The IS discipline has been evolving since the 1960s (Hirschheim & Klein, 2012), yet, having failed to attract and retain many women, it still includes predominately men. A gender imbalance in the discipline is not unique to information systems and is prevalent in the entire computing industry and in other areas such as education, which features more female than male teachers.

An imbalance in specific areas, however, becomes a problem when the gender spread has a detrimental effect on some sections of society. Woszcynski, Beise, Myers, and Moody (2003, p. 1585) express the concern that, without sufficient women in the computing discipline, the development of "technology pursuits may focus more on doing things faster, and less on doing new things that reflect alternative perspectives". Indeed, those who created the Virtual Development Center, a program of the Anita Borg Institute for Women and Technology, did so because of the unequal participation by women in IT around the globe. This:

> *...technology has an extraordinary potential for improving the human condition— from more accurate disaster forecasting to medical breakthroughs in diagnostics and health-care delivery. But what are the problems technology is attempting to solve? Whose priorities are represented? How much of technology truly benefits the world's peoples? Who are the creators of technology? The creators of most of our current technology, however, represent a narrow stratum of the world's*

population—North American males. The important needs and problems that inform and drive technology are defined primarily from the experience and perspective of a few. (Anita Borg Institute, 2004, p. 2)

The Anita Borg Institute argues that the technology we use every day needs to be built by teams that represent the diverse nature of our society. There are numerous examples of computer systems that exhibit design bias against women simply because only men designed them: voice recognition systems that fail to accommodate the pitch of women's voices, algorithms that incorporate male decision preferences, hardware designed for male physical characteristics, graphic interfaces that contain images unfamiliar or off-putting to women, and so on. And, because computer systems "cross borders" fluidly, these effects are international and national.

When one designs these systems with bias whether intentionally or unintentionally, they can become instruments that perpetuate inequality in computer use and information delivery. The information delivered through a computer system may be in a critical area such as healthcare, education, or employment, but, if it is not delivered through a system and in a manner that accommodates women's preferences, it may very well go unused.

If we want future technologies to be innovative and creative and developed free of bias, then we need a diverse workforce. To obtain such a workforce, we need to re-focus our efforts on encouraging girls and women to participate in the information systems discipline. Thus, our efforts, such as this workshop, will have a wide-spread impact not only through supporting and increasing the number of women in IS; but also by broadening the science of IS to include women's perspectives and assuring that the greater society, which is increasingly dependent on computers, has systems to use that are free of bias.

4.3 Jenine Beekhuyzen

Information systems are integral to all aspects of society and they play a critical part in our everyday lives. Historically women have played a significant role in the development of computers, with Ada Lovelace being the first computer programmer in the1800s. Rear Admiral Grace Hopper made a revolutionary contribution to computing by inventing the compiler, which allowed interactions to move beyond punch cards to written code. In our short digital technology history, both moments were groundbreaking (Craig, 2006).

Despite such important contributions, women continue to reject the computing industry as a potential career path because men outnumber them five to one (Merrett, 2014). At a macro level, the United Nations (UN) Commission on the Status of Women has argued that mainstreaming a gender perspective in technology and innovation enhances social and economic equity (Miroux, 2011). This strategy is in response to arguments that, by 2018, globally, we will be without a quarter of the human resources that the ICT workforce needs (Ashcraft & Blithe, 2010). Few doubt that society will not experience an unprecedented demand for qualified computing workers, the lack of which the media has described as having "the potential to slow the U.S. economy" (Cassidy, 2014). But how can this lack of participation by females in our technology industries be responsible for such a dire situation? Table 1 highlights four problems and challenges we face as educators and professionals.

Table 1. Gender of Global Employees at Tech Companies (Griswold, 2015)

Problem	Challenge	Why is it a problem?
There is a lack of user representation in those who build the technologies we all use every day	The need for a diverse ICT workforce that represents the wider population	The varying needs of the entire consumer base needs to be represented
By 2018 we will not be able to fill a quarter of all ICT roles	The ongoing demand for people trained in ICT	The ICT industry's workforce cannot be satisfied in the future by white men alone.
Lack of diversity in teams results in homogenous thinking and ideas limiting decision making and innovation	The importance of equal opportunity and inclusion in ICT careers	Brainpower and creativity fuel innovation, the 'best' brains can come from a variety of bodies
School girls are often dissuaded from pursing ICT careers and suffer from stereotype threat	The alarming trends for the lack of participation of women and minorities educated in ICT	All people should have equal opportunities to pursue a career in ICT

One can clearly see this lack of diverse human resources at a micro level in Table 2. In 2014, Silicon Valley major technology corporations released the diversity breakdown of their workforce. Google reported their figures first: they admitted that only 17 percent of their technical workforce were women. Twitter's figures came later: they reported that only 10 percent of their technical workforce were women. These figures do not represent their user base (surely more than 17 percent of women use Google), and the values and behaviors of the users they do represent are unconsciously embedded in the technologies they create.

Table 2. Gender of Global Employees at Tech Companies (Griswold, 2015)

	Men (all)	Women (all)	Men (tech)	Women (tech)	Men (leadership)	Women (leadership)
Google	70%	30%	83%	17%	79%	21%
Facebook	69%	31%	85%	15%	77%	23%
Yahoo	62%	37%	85%	15%	77%	23%
LinkedIn	61%	39%	N/A	N/A	73%	27%

Diversity is key to creating better technology for society, and a uniquely female perspective is necessary in situations such as domestic violence, where victims are most often women. Domestic violence has a devastating effect on our society with "intimate partner violence the most common type of violence against women, affecting 30 per cent of women worldwide" (WHO, 2013) and such tragedy has long-lasting consequences. However, one can use technology to help those in dangerous situations such as the Australian app by Katherine Georgakopolos, which empowers young women and help them understand the warning signs of abusive and controlling relationships. It is difficult to imagine such an app being developed by a team of men. It is reasons like this that we need more girls to study STEM subjects and to be encouraged to pursue a career in ICT.

4.4 Deb Armstrong

While a significant amount of research in the IS discipline includes gender (i.e., gender differences in technology adoption, computer self-efficacy, etc.), little research has focused directly on the concept of gender.

In the IS literature, several publications have examined the lack of female participation in the discipline. Nelson and Veltri (2011) used a person-process-context-time framework to clarify the role of women in ICT and positioned existing studies in this framework. Kvasny, Trauth, and Morgan (2009) analyzed the state of feminist research in IS by selecting from the five leading IS journals those papers for which gender was a central construct. Adam, Howcroft, and Richardson (2004) analyzed gender and IS papers according to their research methodology (quantitative, qualitative, mixed, or conceptual). Gallivan (2013) considered 190 gender and IS papers published and provided statistics on authors who have done research in the gender and IS discipline and the outlets publishing it. Lin, Califf, and Featherman (2012) identified 44 papers that sought to explain gender differences.

In the few studies directly addressing women as IS personnel, three dominant themes emerged. As early as 1976, researchers addressed the first theme: the need to for women to become more assertive, self- reliant, and independent (i.e., become more like men) if they want to be more successful in the business world (Holmes, 1998; Koehn, 1976). Somewhat related to this is the second dominant theme: gender discrimination in the IS (IS) occupation in which authors document the inequities in salary and position particularly for Western cultures (Adya, 2008; Igbaria, Parasuraman, & Greenhaus, 1997; Kundu, 2003; Mangold, Bean, & Cummings, 1998; Truman & Baroudi, 1994).

The third dominant theme is the retention of women in the IS profession (Moody, Woszcynski, Beise, & Myers, 2003). Panteli, Stack, and Ramsey (1999, p. 170) found that "even though the IT industry does not exclude women, it does little to promote them or even to retain them in the field." In 2002, Ahuja (2002) presented a conceptual model of the barriers effecting women's advancement and retention in the IS profession that sparked several studies documenting the unique challenges women in the IS discipline face (e.g., Allen, Armstrong, Riemenschneider, & Reid, 2006; Armstrong, Riemenschneider, Reid, & Allen, 2007; Riemenschneider, Armstrong, Reid, & Allen, 2006; Trauth et al., 2009).

If men and women think differently about career-development issues, some new areas of potential research on gender in the IS discipline include:

1. **Occupational culture and sponsoring**: if mentoring focuses exclusively on career enhancement, it may not sufficiently deal with the role conflicts that women experience but actually exacerbate them. Hackbarth, Grover, and Yi (2003) found there has been gradual improvement in the perception of women as managers by men in the science and technology disciplines. Could we move beyond mentoring to sponsoring? What are the implications?
2. **Occupational identity**: a lack of consistency in how scholars conceptualize IS occupational identity could lead to a fragmented sense of professional community and disengagement at the individual level. Adam et al. (2006) state that women working in IT jobs who are challenging masculine skills by gaining these skills themselves must

develop strategies to cope with the challenge they may feel is being made to their gender identities and those of the men with whom they work. Is there one IS occupational culture? If so, how do we conceptualize, measure, and potentially change it? How could we make the IS culture more female friendly?

3. **IS gender theories**: researchers are beginning to explore the development of IS-specific gender theories (e.g., individual differences theory) and the critical perspective (e.g., Adam, 2002; Howcroft & Trauth, 2008; Trauth et al., 2009; Wilson, 2004). Trauth (2013) considered the role of theory in the publications on gender and IS and examined the number of gender papers published in several IS journals over time, their methodologies, and their theories (Trauth, 2011). Ridley and Young (2012) assert that theoretical approaches, stated implicitly or explicitly, shape how people understand the under-representation of women in the IT workforce. Research exploring underlying theoretical bias may help reify the gender inequities in the IS discipline.

4.5 Summary

What is clear from the panelists' presentations is that research into diversity issues, such as gender, is critical to understanding how people build, accept, and use technology. The Special Interest Group on Social Inclusion's (SIGSI) establishment highlights the interest of researchers in this topic and their desire to develop communities around it. Thus, the IS community in general and the AIS community specifically need to encourage and support the publication of such material in the top-tier IS conferences and journals.

4.6 Participant Discussion Results

After the panel presentation, organizers presented the survey's results and asked attendees to split into smaller groups to discuss three questions: 1) what resonated with them from the survey and from the panel discussion; 2) what issues they faced that the panel discussion or survey results didn't seem to capture; and 3) what actions might help to solve these issues.

From the three discussion groups, seven key issues arose:

1. **Tenure/career:** is there an academic glass ceiling? One group stated that "a vast majority of [female] responses [from the survey] are at the Associate Professor level—is this where the glass ceiling is now?". Another group noted that it seems that "differences become more visible as you [a woman] advance [in your career]". So is it the case that women are getting "stuck" at the associate level? Some data support the assertion (Mason et al., 2013) that, in fact, women are promoted less than their male colleagues in part for their disproportionate levels of service.

One way to begin addressing this issue might be to have a mentorship program for associate faculty members as we do for junior (assistant) faculty members. Universities often have a clearer path and more fully defined expectations for those looking to apply for tenure than they do for those looking to apply for full professor. One way to address this issue as a community might be to help AISWN college members to find more senior mentors who can help guide them through the process. Another way might be to establish training seminars and workshops tailored

to those at different points in their career, similar to the ongoing AISWN mentoring program and the AIS new faculty and mid-career workshops. But there could be additional webinars that allow participants to understand how to navigate their own path to the rank of full professor. For example, what is a strategic five-year plan? How can they make a strategic five-year plan to obtain the rank of full professor? How can they do "strategic" service rather than allowing it to be overwhelming? How does one leverage their teaching, research, and service responsibilities?

2. **Conform:** women are often pushed to "change their interests to fit in" or marginalized if they do not. Some attendees felt that they or a female colleague had been pushed to change their research interest to fit more with conventional research and not the "touchy feely" topics they were interested in.

As a community, we need to rethink how we value research. We need to get more people-oriented topics into mainstream, top-tier journals, which comes by better representing the AIS community on editorial boards and by publishing high-quality, relevant, and high-impact research.

3. **Open communication:** the participants asked the question, "Why don't we share salary information? We need this information to be able to negotiate and ensure fair treatment". Indeed, Cynthia Beath has mentioned this point earlier (Loicaono et al., 2013, p. 86).

We need to create a culture where it is acceptable for academics to share remuneration information, including specific-salary details, and we need to have related conversations with department chairs. Anecdotal evidence from the workshop suggests women tend to view this information as private.

As a community, we need to provide resources that may help women in trying to understand how their salary stacks up to others. Dennis Galletta (University of Pittsburg) does, in fact, collect some salary data through the MIS salary survey (http://www.pitt.edu/~galletta/salsurv.html) as a service to the AIS community, which the AIS supports. Though gender is not currently collected, it does allow members a point of reference for some salary research. However, this data does not help in situations specific to a particular university. Here, some women at public universities may find it helpful to look at the public salary information for their school. They may also find the American Association of University Professors (AAUP) faculty salary survey helpful (latest collection is from 2013).

4. **Negotiation:** one not only needs information but also know how to use it. The participants indicated that negotiation was not easy or natural for them regardless of whether it was about salary requests, course schedules, or additional resources. For example, some felt that they did not have an option to negotiate additional resources for additional workload. Many felt that they did not feel comfortable asking for additional help or resources even if they had been asked to do something above and beyond their current workload.

Having clear guidelines and transparent processes for how universities, colleges, and departments determine salaries and allocate resources is helpful and makes it easier for women to navigate the process.

Recent research reveals, however, that women become nervous about negotiating for higher pay because they intuit—correctly—that self-advocating for higher pay would present a socially difficult situation for them—more so than for men. But here's a twist: women love it when women negotiate assertively for others. It's just when women are negotiating assertively for themselves—particularly around pay—where there is a backlash (Bowles, 2014).

Therefore, it may be more effective for women to help each other when it comes to the negotiation process, which they could achieve through mentoring. Role-playing with each other might ease the stress of the negotiation process. Additional support, such as recruitment training, confidence building, and transitional processes for women, may help in their negotiating and understanding the "politics" of academia. For example, once a female academic gets her first job, how does she go about getting to the next one? How should she build and maintain a network to help build a support structure. Understanding such factors may be something that all early-career academics could benefit from.

Building such a network of fellow IS women faculty members is the AISWN's raison d'etre. Based on the feedback from its members, the AISWN is designing and providing activities at its pre-ICIS workshop and conferences events to address the training and networking needs of its members. For example, the keynote speaker at the 2015 pre-ICIS workshop will present on how to negotiate since this was a key issue that arose in the 2014 workshop discussion.

5. **Sponsors:** women need sponsors rather than just mentors to help promote their work since they are often not natural self-promoters. Women are not taught or encouraged to "toot their own horns"; hence, they are at a disadvantage to men who feel more comfortable doing so and are less likely to be criticized for it (Williams, Alon, & Bornstein, 2006).

This point echoes back to point four above. Women need other women to advocate for them. This means providing opportunities, such as workshops, seminars, and webinars, for women to continue to gather at conferences, regional events, or online and get to know other women in the community. It also means that women need to make connections with other female faculty members at their university and in their research communities. Hence, networking social events held at AIS pre-ICIS, the AMCIS, ECIS, HICSS, and ICIS conferences by AISWN are critical and should continue.

> *"Women should be better at supporting each other". Some women "pull up the ladder behind them [believing] ... they made it on their own" so should everyone else. This is consistent with previous studies (Huang 2007) in which younger women were dis-heartened by the action of more senior level women. For example, "You would think that women above you would be the ones that would be the obvious people to really help the next generation of women and it usually turns out that they're the worst…"* (Huang, 2007, p. 7).

By encouraging social gatherings and workshops across the AIS community, women can meet other women who are willing to give back via support and mentoring even if such support cannot be found in their individual institutions. We need to encourage a culture of "paying it forward" in the AISWN college and acknowledge/reward those who embrace the ideal and provide this type of service to the college members.

6. **Work-life balance:** one issue that participants raised concerned IS conferences' not providing childcare. There are childcare services at other conferences that are encouraging women to participate, such as at the Association for Computing Machinery Special interest Group on Computer and Interaction group (ACM SIGCHI).

This issue is one that has been brought to the attention of the AIS executive committee, and more conference chairs have made it a point to look for childcare options at conference venues. However, the problem is not necessarily solved. For this reason, AISWN has made helping identify possible childcare options a priority for those attending an AIS conference. Companies such as Corporate Kids Events (http://conferencechildcare.com) and ACCENT on Children's Arrangements (http://www.accentoca.com) are finding that providing childcare at large events is a viable business opportunity.

7. **Culture:** there are national differences in how women are treated. In some countries, women face greater issues with advancement after gaining their PhD. For others, they face issues with promotion after tenure. The issue of gender has a cultural component as well.

We need to continue to investigate and understand the cultural differences that effect women in the IS discipline. To do so, we need to collect data to understand how many women are in the discipline (are AIS members), and how we can address their needs, and we need to invest resources to support their continued advancement. Without women, we will lose a much needed perspective that can be detrimental to our discipline and society as a whole as Annemieke notes in Section 3.2.

5. Conclusion

The workshop made clear that, although we have made significant strides over the past several years to assist women in the IS discipline, such as the AIS women in IS task force's formation and the AISWN's establishment, we have much more to do. As the survey results and workshop discussions suggest, significant differences between men and women in the IS discipline remain—both in terms of perceptions and absolute numbers. To ensure that we can meet the needs of our students, corporations, and society, we need to address these inequities.

5.1 Future Agenda

If we do not consciously include women, then we may be unconsciously excluding them. To make women visible, we need to start collecting and publishing data specifically on gender in IS. Currently, accurate statistics are difficult to come by due to the frequent confusion of

terminology and to the breadth of careers that can be classified in computer science (CS), information technology (IT), information and communications technology (ICT), and computing. The overlap and similarities between these disciplines means that gathering information on just the IS discipline can be a daunting undertaking.

As previous research highlights, women have been underrepresented in the senior editor ranks of the top- tier IS journals (Lamp, 2007). In fact, a quick look at the two top-tier journals, MISQ and ISR, reveal that, at August 2015, approximately 23 percent of the senior editorial staff was female. However, without accurate, longitudinal data of actual IS faculty or even those with AIS membership, it is difficult to determine the trends and how we might pursue equity. We find it remarkable that the AIS is not capturing this type of data. Capturing basic meta-data on gender representation in top-tier publications, editorial roles, and leadership positions in AIS such as Lamp (2007) collected should be a top priority.

After learning in 2014 that only two female keynote speakers have spoken at the Australasian Conference on Information Systems in 20 years, the fourth author embarked on collating figures for ECIS and ICIS. Such efforts were thwarted not by the lack of collegiality in trying to source the figures from past conferences (eight IS academics were involved) but in the lack of systematic documentation. In finding out that there had not been a single woman keynote in the past four years at either conference (through many emails), we also discovered that AIS does not currently have an accurate account of basic data such as the gender breakdown of its membership. Thus, the survey discussed in this paper is a highly valuable contribution to understanding the IS discipline.

Lastly, we need to be mindful of the diversity of our project teams. We need to know, for example, how many members of AIS are women and what sort of careers they have. We need to increase their visibility by publicizing their accomplishments and keeping track of their numbers. We need to keep gender on the agenda until there is equality in terms of the numbers of women in IS, the pay they receive, and their representation in the higher levels of the power hierarchy (Trauth, 2012). These issues are not women's issues but equality issues that all discipline members should recognize: everyone can contribute to the solution. If we don't acknowledge that a problem exists, we cannot ever hope to solve it.

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