

Women in Science, Engineering and Technology: Coping with Challenges

by Ms. Reika Kua Kee Eng

JUGGLING between work and family life as well as balancing between the two is never an easy task, especially for women who are trying to advance their career in Science, Engineering and Technology, which are pre-dominated by men, and to say the least, climbing up the corporate ladder in the industry will certainly be more challenging than what these women have envisioned.

Thus, during the 2012 IEM Women Engineers Annual Gathering, themed, "Growth, Innovation, Leaders in Engineering", *JURUTERA* has seized the opportunity to interview one of the prominent women personalities in Malaysia, Ir. Hj. Khalidah Haron, the Managing Director of Tenaga Nasional Berhad (TNB) Integrated Learning Solution (ILSAS).

Apart from our local personalities, *JURUTERA* has also managed to get some invaluable insights from some of the outstanding women personalities from different parts of the world in conjunction with the "Women in Science, Engineering and Technology International Conference 2012" (WiSET 2012) recently held at the Istana Hotel, Kuala Lumpur, namely Kong-Joo Lee, President of the International Network of Women Engineers and Scientists, from the

Republic of Korea, Engr. Valerie Agberagba, Vice President of the Nigerian Society of Engineers, and Er. Emily Tan, the Managing Director of TSM Consultancy Pte. Ltd.

HOW WOMEN PROFESSIONALS DEAL WITH THEIR MAJOR CHALLENGES

Although the gender biases issue in workforce has improved with time, there is still more room for improvement to address issues such as disparity in salary between male and female, gender preference in competing for high ranking positions in organisations, and getting recognition for their efforts in the fields of science, engineering and technology, as well as how women could balance the pole between work and family life.

According to the Gendered Innovations project initiated at Stanford University, based on the data in the research, 'Part 1: Disparities between Women and Men', it is found that women scientists and engineers are, on average, paid less than their male counterparts. This holds in both academia and the private sector. It also holds in the United States (US), the European Union (EU) as a whole, and all individual EU member states. Statistical differences between women's and men's salaries remain even when degree level, occupation, years of work experience, working hours per week, and employment sector are controlled for.ⁱ

Based on the same research, under the category of vertical segregation in which it describes the disparities between women and men by level of seniority in a particular field, the data has consistently shows that women's representation declines as one moves up the hierarchical ladder in both the EU and U.S. (refer to Figure 1). One of the many consequences of vertical segregation is that women are substantially underrepresented as academic "gatekeepers" such as grant evaluators, tenure committee members, journal editors, and members of

national academies.ⁱⁱ

ⁱ <http://genderedinnovations.stanford.edu/institutions/disparities.html>

ⁱⁱ *Ibid.*



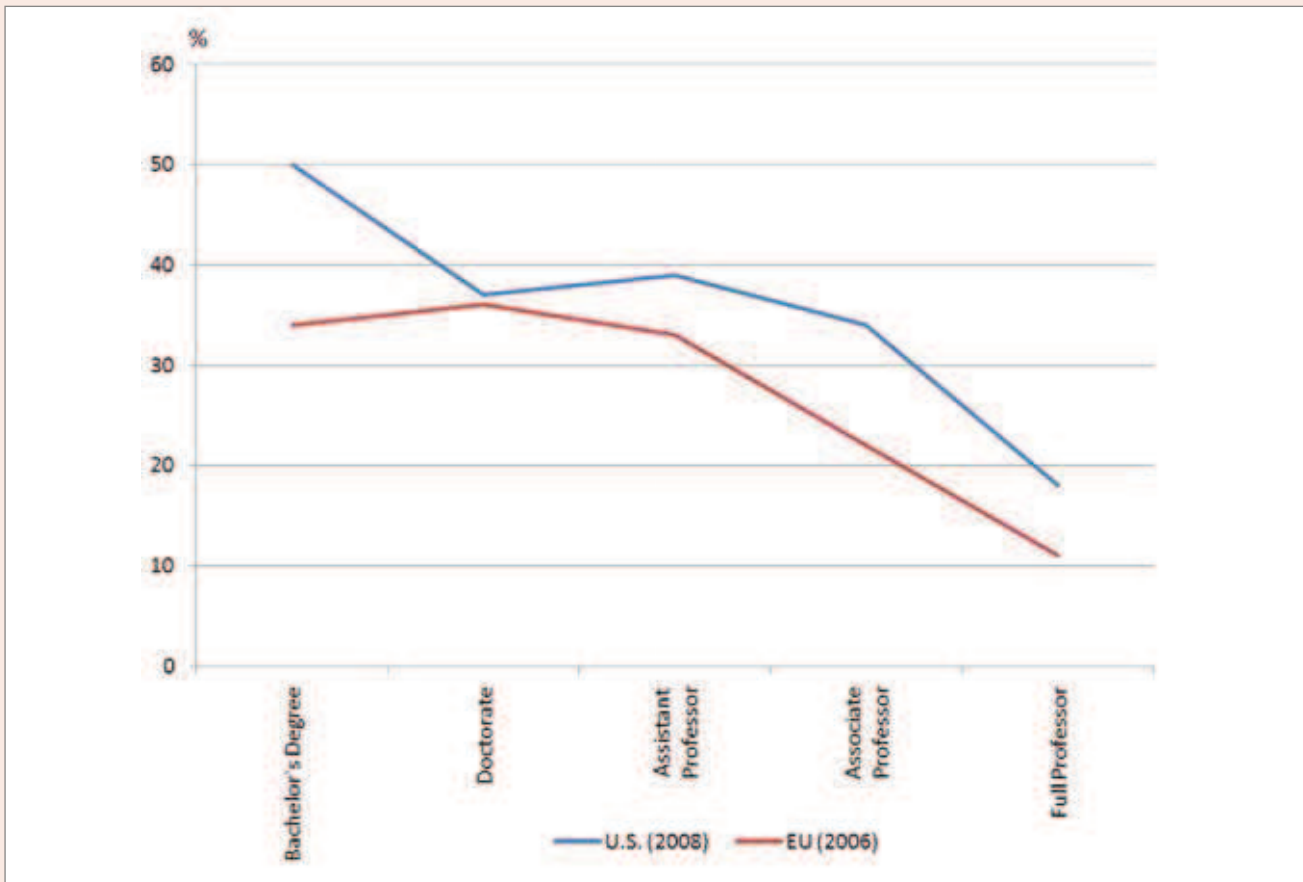


Figure 1: Women's shares of S&E degrees and S&E academic positions in the U.S. and EU
(Source: <http://genderedinnovations.stanford.edu/institutions/disparities.html>)

If such disparities exist between women and men in advanced country such as U.S. or in countries within European Unions, then what about disparities between women and men in Asia?

However, according to the Managing Director (MD) of TNB Integrated Learning Solution (ILSAS), Ir. Hj. Khalidah Haron, in Malaysia, the gender biases issue is not as bad as compared to some of the Asian countries. In fact, Malaysian women are given more opportunities nowadays to assume higher ranking positions in organisations or institutions as opposed to some other developing countries in Asia or Third World countries, although there is still more room for improvement in such trend.

MISPERCEPTION BASED ON GENDER – HOW TO HANDLE IT?

“When you are young, especially when you are a lady, and you are relatively good looking, people tend not to take you seriously. And they probably assume that you are a secretary,” said Er. Emily Tan, the Managing Director of TSM Consultancy Pte. Ltd. However, according to her, it all depends on the mindset of an individual as to whether or not she will be

able to get over those common perceptions in the workforce comprising more males than females, especially in the fields of science, engineering and technology. She continued, “You will just have to press on and show others that you can actually deliver and perform well in your work.”

Er. Emily Tan pointed out that most firms are more open

in terms of offering opportunity to junior women in the workforce as compared to 15 years ago, where young women employee need to really struggle to gain the trust from their employer and clients. Such scenario is seen as an improvement by Er. Emily Tan, as she emphasised

“You can't work 24/7. So you need to concentrate on your work when you are in the workplace, and you need to stay focus when you are attending to family issues.”

that evaluation of work performance should be based on merit and not gender.

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Ir. Hj. Khalidah Haron,
the Managing Director
of Tenaga Nasional
Berhad (TNB) Integrated
Learning Solution
(ILSAS)



Engr. Valerie Agberagba,
Vice President of the
Nigerian Society of
Engineers



Er. Emily Tan,
Managing Director of TSM
Consultancy Pte. Ltd.



Ir. Raftar bt. Mahfar,
Director of SCG
Consultants Sdn. Bhd.



Ir. Sharifah Azlina bt. Raja
Kamal Pasmah,
Chief Operating Officer of
HSS Engineering Sdn. Bhd.



Ir. Assoc. Prof. Hayati
bt. Abdullah,
Director for UTM's
Professional
Qualification
Development
Programme

The panel of interviewees consisting of outstanding women personalities, both locally and internationally, who provided invaluable insights to women in science, engineering and technology, especially in dealing with challenges due to gender biases

Ir. Hj. Khalidah Haron also commented that although preference sometimes will be given to male counterparts when it comes to consideration for promotions, a proper system of appraisal such as Key Performance Indicators (KPI) and Performance Development Programme (PDP) would help to counter this issue, as regardless of gender, one's work performance is measurable and it is based on such merits that one's qualification for promotion should be determined.

"I think the biggest challenge for women engineers in Nigeria is that they are not allowed to handle major projects. While the women engineers would be assigned to tasks such as doing the designs in office, but when it comes to construction or on-site jobs, most companies will pick male engineers to do it because they feel that women engineers couldn't devote as much time in the projects as opposed to their male colleagues," said Engr. Valerie Agberagba, the Vice President of the Nigerian Society of Engineers. "To overcome these biases, you just have to keep on doing your bit and make sure you deliver on time. When you perform well in every little task given to you, eventually your efforts will be recognised by others," added Engr. Valerie Agberagba.

BE AN ALL-ROUNDER, NOT JUST A SKILLED ENGINEER!

When Ir. Hj. Khalidah Haron was asked about how women engineers should cope with the challenges in the engineering field pre-dominated by males, she replies, "You

have to believe in yourself and know what you want. Once you are set to be an engineer, you have to plan your road map and you will reach your destination. But of course, there will be obstacles along the way." She continued, "Your male colleagues will give you the cooperation when they observe that you could perform well as an engineer; you are logical, measurable in what you do, and not being emotional. Besides that, you have to learn *their language*."

"On top of that, women engineers should be well-versed in other areas apart from being a skilled engineer. You are an engineer, an administrator, a consultant, a researcher, and you have to be good in management and human resource areas too," advised the MD of TNB Integrated Learning Solution (ILSAS).

GOOD SUPPORT SYSTEMS ARE ESSENTIAL

According to Er. Emily Tan, having a good family support is essential for a woman in any career. For single women, having the support from their

parents is crucial while for those who are married, having the support from their spouse is equally important if women aim to succeed in their career. "I'm lucky to have supportive parents. Not only are they very supportive in my engineering work, my parents are also very supportive in other works that I'm involved in such as community service and so forth," Er. Emily Tan gave an example of her personal experience while expressing her gratitude towards her parents.

Er. Emily Tan also expressed that employers should make things more conducive for their women employees by

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offering more flexible working hours. "I have come across some firms that actually offer flexible working hours to their employee. I think as long as you complete your tasks and perform accordingly, this shouldn't be an issue," said Er. Emily Tan.

Ir. Hj. Khalidah Haron and others who were present at the 2012 IEM Women Engineers Annual Gathering such as the current Chairperson of IEM Women Engineers Sub-Committee, Ir. Raftar bt. Mahfar, who is also the present Director of SCG Consultants Sdn. Bhd.; Ir. Sharifah Azlina bt. Raja Kamal Pasmah, the Chief Operating Officer of HSS Engineering Sdn. Bhd. and current Deputy Chairperson of IEM Women Engineers Sub-Committee; and Ir. Assoc. Prof. Hayati binti Abdullah, the Director for UTM's Professional Qualification Development Programme, also agree that more flexibility in terms of work hours for women engineers would make a big difference in helping these women professionals to juggle between their work and family life.

According to Kong-Joo Lee, President of the International Network of Women Engineers and Scientists (INWES) representing the Republic of Korea, support from the relevant women organisations is important in order to improve women's standing in science and engineering, as struggling alone as an individual is a very tiring effort and inefficient. Hence, she urges more women to participate in various programmes organised by women organisations for professionals, especially in science and engineering, or increase their involvement by being committee or sub-committee members. Lee also stressed that support from the society at large, and family is equally significant for women scientists and engineers to excel in their career.

Lee advises that women scientists and engineers should make clear distinction between their work hours and their personal time, "You can't work 24/7. So you need to concentrate on your work when you are in the workplace, and you need to stay focus when you are attending to family issues or when you are spending time with your family."

INCREASE WOMEN'S INVOLVEMENT IN ENGINEERING

The Association of Professional Women Engineer of Nigeria (APWEN) which was formally inaugurated in 1983 had only six (6) members at its inception in 1982. The membership has grown over the years to over 1,500 with members throughout Nigeria, which indicates that on average, the increase of women engineers over 30 years is still relatively low, that is about 50 additional women engineers per year.

According to a recent news article published in the *Nigerian Tribune*, the oldest surviving private newspaper in Nigeria, it is said that professional female engineers in Nigeria have expressed their concern over the low number of practising female engineers in the country and urged parents to encourage their female children to take up engineering profession. The National President of Association of Professional Women Engineers of Nigeria (APWEN), Olayinka Abdul, also stressed the need for the training of the young girls to embrace the engineering profession, especially in aviation. She said that the association was not satisfied with the number of practising female engineers in the country, emphasising that the profession needed the participation of more females.

When asked about the involvement of female engineers in IES Council, Er. Emily Tan, who is also a Council Member of the Institution of Engineers, Singapore (IES), replied "For now, there are only about 10% of IES council members comprising female engineers, which can still be considered rather low". She added, "There are no hard and fast rules about the effort to encourage more women engineers to become council members in IES, but when I get back to Singapore, I will certainly try to work out something to encourage more women engineers to get involve in IES."

When all's said and done, all the above prominent women personalities seem to agree on a few crucial traits or elements that all women scientists and engineers should cultivate in pursuing their career advancement, namely perseverance, outstanding and consistent work performance, being an all-rounder, being more versatile, gaining support from family, and continuous involvement in various organisations that support women's undertaking in the fields of science, engineering and technology. ■

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