WHAT DRIVES FEMALE ATTRITION IN STEM PROFESSIONS?

HIGHLIGHTS FROM THE: Society of Women Engineers’ National Gender Culture Study

The attrition rate for women engineers and women in all STEM professions remains high and has resulted in a critical shortage of women in technical leadership positions. The root cause of attrition is corporate culture, but what about the culture drives women out?

WE KNOW THAT:

Women make up 20% of engineering school graduates\(^1\) but only 12% of practicing engineers.\(^2\)

AND we know that 30% of women who have left the engineering profession cited organizational climate as the reason.\(^3\)

THE SOCIETY OF WOMEN ENGINEERS (SWE) decided to take a close look at the culture of the engineering workplace to find out what drives female attrition and launched the SWE National Gender Culture Study. It’s the first national study of its kind to look at potential gender bias in engineering and to examine the role of corporate culture in STEM’s “leaky pipeline.”

Four SWE Corporate Partnership Council (CPC) members participated in the study: 3M, Booz Allen Hamilton, Honeywell Aerospace, and United Technologies Corp.

FOLLOWING ARE THE HIGHLIGHTS FROM THIS GROUNDBREAKING STUDY.

“A culture study gives you a snapshot of a culture’s fitness,” said Beth Michaels, president of Primer Michaels, the consulting firm that ran the study. “People care about culture because it’s a driver for recruitment, retention, and advancement and for developing workplaces where people do their best work and meet company goals.”

WE ASKED MORE THAN 3,200 PROFESSIONAL ENGINEERS ABOUT THEIR VALUES

51%

49%

THE FACT:
Hiring managers are achieving their female recruitment goals. But 40 percent of female engineers leave five to eight years later, particularly those in the leadership pipeline.4

THE PROBLEM:
Female attrition results in lost ROI and reputation. What can we learn about women’s values and company culture that could improve retention?

THE HYPOTHESIS:
When senior leaders get specific information about gender and culture, then female retention will be improved if actionable strategies are employed.

THE STUDY:
The purpose of the study was to determine to what degree men and women experience company culture differently and to what degree they want the same company values. We asked more than 3,200 professional engineers about their personal values, the values they experience in their current culture, and their desired values for company culture.


KEY TERMINOLOGY

ESPOUSED VALUES: The short list of beliefs and behaviors companies say are imperatives.

CURRENT CULTURE: What values engineers experience day to day

PERSONAL VALUES: An individual’s conception of the beliefs that underpin good personal and professional decision-making

DESIRED CULTURE VALUE: The beliefs and behaviors individuals desire from an organization’s culture

LIMITING VALUES: The beliefs and behaviors that detract from a high-performance culture
Men and women report basically the same positives and negatives in the workplace. Even the degree of dissatisfaction is generally the same.

Men and women report different value gaps between their personal values and their companies' values. Women, particularly the female leaders, report an acute gap in accountability and quality.

Women exhibit more intolerance toward values stretch and chronic issues.

Although women are clearly responding differently than men, diversity and inclusion as selected values disappeared; evidence of Second Generation Bias plays a pivotal role in this.

Male and female engineers have very similar Personal and Desired Culture Values. However, female engineers highly value Balance as both a Personal and Desired Culture Value while male engineers highly value Adaptability.

Male and female engineers report a high number of limiting values within their Current Culture. Female Leaders ages 31-50 report the highest number of limiting values and the largest value gap of any subgroup.

This was apparent in the Current Culture for all subgroups except Female Leaders ages 31-50, who listed it as their #1 Personal and Desired Culture Value.

The Female Leaders who participated in the study express this frustration over a lack of accountability. Accountability was their number one personal and desired cultural value, but it is not part of the Current Culture. The message to company leaders that emerges from this data is: “Decide what you want, mean what you say; take down the barriers, and let me do my job.” If company leaders don't get this message, women will continue to leave engineering.
What companies say they value (Espoused Values) and what engineers believe their companies value (Current Culture) are not well aligned.

**FOUR ESPOUSED VALUES:**

1. **CUSTOMER SATISFACTION**
2. **INTEGRITY**
3. **QUALITY/EXCELLENCE**
4. **DIVERSITY/INCLUSION**

Both Females and Males believe that the Current Culture highly values Customer Satisfaction and Integrity.*

Male Leaders believe that Quality/Excellence is highly valued in the Current Culture, but Female Leaders and Females ages 31-50 do not.

Neither gender chose Diversity/Inclusion as a personal value, a current cultural value or a desired value.

“Women are frustrated and leaving the workforce, but not for the reasons you think. The disparities from the study indicate a lack of confidence in company direction, which is vital to employee engagement and retention. Companies are claiming some of these values to be at the core of their culture, however the data reveals that participants, both male and female, aren’t necessarily having these experiences. Prior research⁵ has shown that women are not as tolerant as men of persistent values gaps, leading to their ultimate resignation.”

Karen Horting, Executive Director and CEO of SWE

MALE AND FEMALE ENGINEERS SHARE SIMILAR VALUES ...

SHARE SIMILAR PERSONAL VALUES

- Continuous Learning
- Positive Attitude
- Efficiency
- Accountability
- Honesty
- Integrity
- Family
- Humor/Fun
- Balance (home/work)
- Responsibility
- Coaching/Mentoring
- Adaptability
- Performance

AND SIMILAR DESIRED CULTURAL VALUES

- Balance (home/work)
- Employee Recognition
- Leadership Development
- Accountability
- Teamwork
- Quality/Excellence
- Coaching/Mentoring
- Continuous Improvement
- Open Communication
- Information Sharing
- Customer Satisfaction
- Adaptability
- Innovation

... BUT DIFFERENCES EXIST

While both Males and Females value Coaching/Mentoring as a Desired Culture Value in the workplace, it does not appear as a Personal Value for Females as it does for Males. Alternatively, both Males and Females value Balance (home/work) as a Personal Value, but only Females list it as a Desired Culture Value. Males also value Adaptability and Innovation (a greater focus on risk tolerance and empowerment) in their companies, while Females desire Employee Recognition and Leadership Development (a more personal approach).
### TOP 10 PERSONAL VALUES: FEMALE/MALE RANKINGS

<table>
<thead>
<tr>
<th>Female Ranking</th>
<th>Personal Value</th>
<th>Male Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Balance</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Family</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Honesty</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Accountability</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Integrity</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>Continuous Learning</td>
<td>11</td>
</tr>
<tr>
<td>7</td>
<td>Responsibility</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>Positive Attitude</td>
<td>15</td>
</tr>
<tr>
<td>9</td>
<td>Efficiency</td>
<td>20</td>
</tr>
<tr>
<td>10</td>
<td>Humor/Fun</td>
<td>5</td>
</tr>
</tbody>
</table>

Males selected Coaching/Mentoring (#7), Adaptability (#9) and Performance (#10)

### TOP 10 CURRENT CULTURE VALUES: FEMALE/MALE RANKINGS

<table>
<thead>
<tr>
<th>Female Ranking</th>
<th>Current Culture Value</th>
<th>Male Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teamwork</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Customer Satisfaction</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Goal Focus</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Resource Constraints/Long Hours</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>Cost Reduction</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Accountability</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Ethics</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>Productivity</td>
<td>11</td>
</tr>
<tr>
<td>9</td>
<td>Professionalism</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>Quality/Excellence</td>
<td>9</td>
</tr>
</tbody>
</table>

Males selected Competence (#7) and Performance (#10)

### TOP 10 DESIRED CULTURE VALUES: FEMALE/MALE RANKINGS

<table>
<thead>
<tr>
<th>Female Ranking</th>
<th>Desired Culture Value</th>
<th>Male Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teamwork</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Accountability</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Coaching/Mentoring</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Balance</td>
<td>14</td>
</tr>
<tr>
<td>5</td>
<td>Info Sharing</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Open Communication</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>Quality/Excellence</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>Continuous Improvement</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>Employee Recognition</td>
<td>16</td>
</tr>
<tr>
<td>10</td>
<td>Leadership Development</td>
<td>15</td>
</tr>
</tbody>
</table>

Female Leaders select Accountability as #1 in the Desired Culture. Males selected customer satisfaction (#5) and Adaptability (#8)

*Out of 20 identified values
Limiting values are the beliefs and behaviors that detract from a high-performance culture. The total number of limiting values chosen by survey respondents to describe the Current Culture results in an entropy rate. Respondents across both genders had high entropy rates, and both genders listed limiting values in the Top Ten. Females ages 31-50 showed the highest entropy rate (24%), and Females as a whole listed two limiting values in their Top Ten.

**GOAL:**

The goal is to have less than 12% of the chosen Current Culture Values categorized as limiting values, with no limiting values appearing in the Top Ten.

<table>
<thead>
<tr>
<th>GENDER</th>
<th>ENTROPY RATE</th>
<th>LIMITING VALUES IN TOP TEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>20%</td>
<td>Cost Reduction</td>
</tr>
<tr>
<td>Male Leaders</td>
<td>21%</td>
<td>Short-Term Focus</td>
</tr>
<tr>
<td>Females</td>
<td>23%</td>
<td>Resource Constraints/Long Hours</td>
</tr>
<tr>
<td>Female Leaders</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>Females age 31-50</td>
<td>24%</td>
<td>Cost Reduction</td>
</tr>
</tbody>
</table>

**ENTROPY RATES IN THE 20-29% RANGE INDICATE THE NEED FOR SYSTEM-WIDE CHANGES.**

<table>
<thead>
<tr>
<th>ENTROPY RATES</th>
<th>MALES</th>
<th>MALE LEADERS</th>
<th>FEMALES</th>
<th>FEMALE LEADERS</th>
<th>FEMALES BY AGE GROUPS (&lt;31, 31-50, 51+)</th>
<th>CHANGE REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td># Respondents</td>
<td>1,633</td>
<td>324</td>
<td>1,565</td>
<td>275</td>
<td>443 / 740 / 325</td>
<td></td>
</tr>
<tr>
<td>&lt;12%</td>
<td>Goal</td>
<td>Specific adjustments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 – 19%</td>
<td>(Minor Issues)</td>
<td>System-wide initiatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 – 29%</td>
<td>20%</td>
<td>21%</td>
<td>23%</td>
<td>23%</td>
<td>22% / 23% / 24%</td>
<td>Plus leadership coaching</td>
</tr>
<tr>
<td>30 – 39%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Plus select leader changes</td>
</tr>
<tr>
<td>40 – 49%</td>
<td></td>
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</tbody>
</table>

Limiting values described by both genders reflect mutual dissatisfaction with the current culture.
A comparison of Desired Culture Values against what Females and Males observe in the workplace (Current Culture) identified some value alignment:

Overall, Males and Females call out **Accountability** as a personal value, a current culture value and a value in their desired culture. Overall, both Females and Males observe **Teamwork and Quality/Excellence** in their Current Culture.

Respondents in the 31-50 age group show much less confidence in company direction. Female leaders 31-50 stand out in this regard, with only one value in their desired culture present in their current culture.
PERSONAL AND DESIRED CULTURE VALUES VS. CURRENT CULTURE

FEMALE ENGINEERS
Balance (home/work) is a Personal Value and a Desired Culture Value, but it is not apparent in the Current Culture. Two limiting values (in purple) were listed in the Current Culture.
MALE ENGINEERS

Coaching/Mentoring and Adaptability are Personal and Desired Culture Values, but they are not apparent in the Current Culture. Males noted Customer Satisfaction as a matching value. One limiting value (in purple) was listed in the Current Culture.
PERSONAL AND DESIRED CULTURE VALUES VS. CURRENT CULTURE CONTINUED

FEMALE LEADERS
Like all Females in this study, Female Leaders personally value and desire Balance (home/work), but they also personally value and desire Coaching/Mentoring – similar to the Male respondents. Unlike the Male and general Female respondents, Female Leaders do not observe Quality/Excellence as highly valued in their Current Culture, but they do list Customer Satisfaction as a matching value – similar to Male respondents.
FEMALES AGES 31-50

Like all Females in this study, Females in this age group personally value and desire Balance (home/work), but unlike other Female respondents, this age group observes Balance in their Current Culture. Females in this age group only list Teamwork and Customer Satisfaction as a match between Current and Desired Culture – a difference from all other subgroups.

SWE's goal for this study is to equip senior leaders with valid data that could improve female retention.

For more information about the results and actionable recommendations, visit RESEARCH.SWE.ORG.