GENDER BALANCE IN ENGINEERING: IS THIS AN ISSUE WORTH PURSUING?

INTRODUCTION

In 1987, the graduating class for Mechanical Engineering at the University of British Columbia in Vancouver, BC, had 96 members; nine of whom were women. Twenty years later, only one of the women from that class was practicing as a mechanical engineer. In 2013, the graduating class for Mechanical Engineering Technology at Camosun College in Victoria, BC, had 35 members; three of whom were women. These two examples are surprisingly consistent with the national statistics: between 1996 and 2011, women comprise less than 10% of the population of Canadian students and graduates in mechanical engineering across all provinces (Figure 1). This percentage has not changed over the last half-decade and is indicative of the broader issue that women are still under-represented in engineering and applied science: women comprise less than 18% of the total population of Professional Engineers in Canada ("Canadian Engineers for Tomorrow", 2012). Some disciplines see higher percentages of women, such as environmental engineering and chemical engineering, and others lower percentages, as shown in Figure 2 (Fender, Davidson, Vassileva, Ghazzali, & Croft, 2011; "Canadian Engineers for Tomorrow", 2012).

Since the founding of the United Nations Fund for Population Activities (UNFPA) and the subsequent enactment in many countries of legislation to remove barriers to women ("UNFPA - Frequently Asked Questions", 2008), many professions promote gender balance. Engineering, law, accounting, medicine, and economics are examples of affected professions and some have seen significant improvements in gender balance and related organizational success. In response to the lack of change in engineering (Hersh, 2000), the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) recently voted to support an initiative that will address the issue by "setting up a task force with sufficient financial and staff resources to support and promote improving the number of women in engineering" ("Report to Council", 2012). But is this an appropriate use of resources and will a change in gender balance within engineering be beneficial to the profession? Is gender balance in engineering an issue that should be pursued?

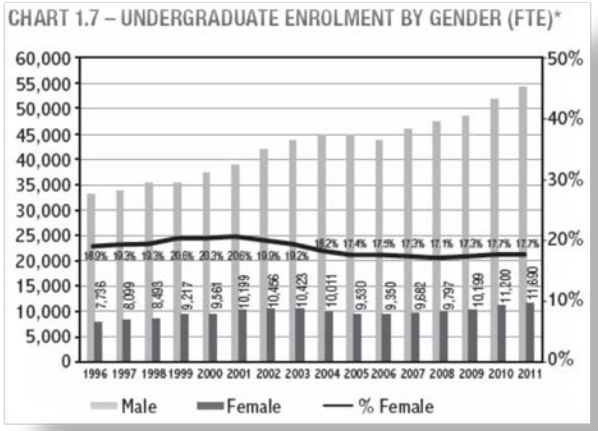

Figure 1: Undergraduate enrolment in engineering undergraduate programs, 1996 - 2011, % women (Canadian Engineers for Tomorrow, 2012)

Through the analyses of the current engineering population, the experiences of professions that achieved near-gender balance and the organizational benefits realized by businesses with gender balance, it becomes clear that the issue of gender balance in engineering is worth the pursuit.

CURRENT STATE OF CANADIAN ENGINEERING

On April 13, 2013, the Globe & Mail newspaper published the following article: *Canada Has a Serious Shortage of Engineers* (Dyson, 2013). In this article, Sir James Dyson commented on the Engineers Canada report which forecasted significant growth in sectors that require the services of Professional Engineers, and noted that as many as 95,000 Canadian engineers will be retiring by 2020. Engineering institutions produce 12,000 graduates annually ("Canadian Engineers for Tomorrow", 2012), insufficient to fill the upcoming void because, of those graduates, only 70% will enter practice (Fender et al., 2011). "Canadians...must continue to get young people interested in engineering at an early age" (Dyson, 2013, p. 5) in order to increase university and college intake numbers. Furthermore, the pool of potential engineering students is limited by gender (Fouad & Singh, 2011; Statistics Canada, 2012), increasing the challenge and decreasing the likelihood that the shortage can be overcome. Encouraging new engineers to work in the field is a significant part of the challenge.

Less than 70% of engineering students nearing graduation expect to pursue careers in engineering (Fender, et al., 2011). Women are more likely than men to choose graduate studies and of the small group who indicated they chose to leave engineering, 78% of the women and 22% of the men intended to stay in a science field (including medicine); most of the men intended to pursue business or law after leaving engineering. Although both female and male students were satisfied or very satisfied with their Canadian programs of study, most indicated they chose to leave engineering because of perceptions of the workplace.

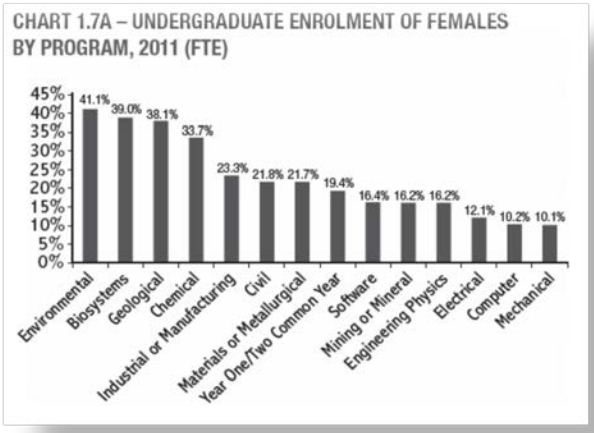

Figure 2: Undergraduate enrolment in engineering undergraduate programs by discipline, % women ("Canadian Engineers for Tomorrow", 2012)

Women tend to choose careers in science and engineering because they believe these studies will enable them to "contribute to the social good" (Fox, 2003, p.121). They do not leave those careers because they lack aptitude or ability, proven by comparisons of male and female grade point averages in an American study of university engineering and science degrees, Fox (2003) reported, but rather for the same reasons their male counterparts leave: their expectations about the work were not met and their developed perceptions of the workplace culture were negative. These opinions and perceptions are based on their educational and work experiences while at school: "hiring practices and workplace climate may be significant barriers to attracting and retaining

women [in careers in engineering]" (Fender et al., p.6). As Fouad and Singh (2011) reported in *Stemming the Tide: Why Women Leave Engineering*, many female engineers who left the profession were very disappointed that they did not "build cool stuff" as was promised in engineering school, and that opportunities for advancement required working very long hours or on inflexible schedules (Fouad & Singh, 2011). More than 63% of female engineering students in Canada anticipate facing gender-based discrimination in the workplace. Turkish women noted they choose engineering because they enjoy math and science but leave because they discover career progression is limited in comparison with male colleagues (Smith & Dengiz, 2010). This global phenomenon of professionals leaving their chosen careers mid-stream in their progression along the educational ladder from grade school through graduation, is known as the "leaky pipeline" (McDonnell, 2005).

Engineers Australia observed the phenomenon of low female participation in engineering practice and instituted a comprehensive study of Australian women in engineering to determine why retention was so poor. Their findings were startling: the age profiles of working engineers were markedly different for men than for women. The age profile for women in engineering peaked in the 20-29 age bracket while that for men peaked in the 30-39 age bracket. Analysis of the age profile of female engineers no longer working in the profession indicated the leak in the pipeline: women over 30 were leaving the profession. The study found that women in Australia were generally more dissatisfied than men "with workplace culture and conditions…opportunities for promotion, recognition and rewards, [and] workplace communication and management" (Roberts and Ayre, 2002, p. 1). Women were more likely to experience "negative perceptions about their abilities and their commitment to engineering [and were more often excluded from] mentoring and social networks" (p. 16), behaviours that undermine women's confidence. Multiple recommendations were made in the 2002 report; the follow-up study completed in 2007 indicated few improvements were evident (Mills, Mehrtens, Smith & Adams, 2008) and proposed eight further recommendations, including a repeat of the study after another seven years have passed.

> "Although there have been increases in the number of women joining the engineering profession over the last two decades, women engineers are still in a minority in all countries"
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> (Küsk, Özbilgin, & Özkale, 2007, p. 110).

Finding examples of successful progression towards gender balance in engineering is difficult as women engineers are still a minority in all countries, at less than 20% (Fouad & Singh, 2011; Hersh, 2000). Canada is achieving the global average percentage of women in engineering, in comparison with 10.6% in 1999 in the USA and 12% in the UK (Evetts, 1998). The countries with the highest percentages of women in engineering are Bulgaria, Portugal and Turkey, with 35.5%, 35.3% and 34.5% respectively (Eurostat, 2004). Yet even these countries continue to study and analyze behaviours and trends for women in engineering: the numbers are low when compared to the balance of gender in higher education and professional careers.

Retention of women in Canadian engineering is 50% of female graduates; women represent 12.2% of the population of practicing engineers in Canada (Statistics Canada, 2006). In order to meet Canada's need for engineers in the future, the profession must stem the tide or block the leak in the

pipeline of men and women who leave the profession after five to seven years by addressing the negative organizational culture that exists or is perceived to exist in engineering firms (Fouad & Singh, 2011). The analysis of the activities of other Canadian professions which have had some measure of success in achieving near gender balance gives further insight into the necessity of pursuing gender balance in the engineering profession (Smith & Dengiz, 2009).

GENDER BALANCE IN ACCOUNTING, ECONOMICS, LAW & MEDICINE

Accounting, Economics, Law and Medicine are professions that have actively addressed the issue of gender imbalance (DeFelice, 2011; Hooks, 1996). While some have significantly altered the percentage of women entering university and practicing in the discipline, others have not been successful. Analysis of the behaviours and outcomes of these professions informs engineers on the purpose, ability and intent necessary to succeed in promoting gender balance.

ACCOUNTING

Enrolment into American undergraduate accounting programs in 2011 was 50% female (Moore, Mahler & Ashton, 2011), and the total number of graduates continues to climb (DeFelice, 2011), which is very good news for accounting firms, 90% of whom are reporting a continued or increased need for new graduates. In 2010, gender parity was reached in graduate hires, while the industry overall is 45% female. The highest percentage of women (49%) is in smaller firms with 10-49 people.

> "The presence of a single token woman is not much better [than having none] since multiple female role models are important to send the message that there are alternative ways to be a woman in science"
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> (Chesler & Chesler, 2002, p.51).

The face of accounting changed as clients began to ask that service teams reflect their own culture and gender (Hooks, 1996). Female customers wanted female accountants who would better understand their values and needs, so the large accounting firms realized that if they wanted to keep their clients, they had to change. The resulting gender balance therefore was client-initiated but occurred through conscious strategic decisions to make the workplace more supportive of female accountants' needs. These changes included instituting family programs, multiple career path models, equal opportunities for career advancements, and other initiatives that promote the retention of women (Johnson, Lowe & Reckers, 2012). Six major accounting firms including Ernst & Young, KPMG Peat Marwick, and Deloitte & Touch, made changes like these in the 1990s to uphold their status as the leaders of accounting. Addressing gender balance is "not easy, but…was necessary for [their] business' continued success and vitality" (p. 56). However, the percentage of women among accounting partners is only 21%. Gender equality is not yet pervasive enough to be self-sustaining throughout accounting practices.

ECONOMICS

Economics is a rapidly growing field and, except for a few years of a plateau between 2005 and 2007, universities are annually graduating larger classes as they meet the growing need (Siegfried, 2011). Between 1990 and 2010, the percentage of women in all North American graduating classes

at all levels from Bachelor's through Doctorate degrees was between 23% and 37%, with the overall average in 2010 of 30% (Siegfried & Round, 2001). Some of the literature exploring reasons for this low number appears to be negatively biased against women, citing gender differences in perceptions and preferences (Johnson, Lowe & Reckers, 2008); other authors cite the chilly reception women receive in the economics field as the reason they avoid the profession (Jonung & Ståhlberg, 2008; Siegfried and Round, 2001).

As early as 1911, Swedish economics professionals recognized the need to encourage and include women's perspectives into the profession (Jonung & Ståhlberg, 2008). While this early initiative was unsuccessful and while the debate may have laid the groundwork for the first women to hold public office in 1925, no other support for women in economics has surfaced in Sweden. Very slow inroads are being made towards gender balance in professional economics elsewhere in the world. Starting in 1972, economic associations in the US have "taken explicit measures with the aim of promoting the careers of female economists" (p. 175); their Canadian, British and Australian counterparts are supporting gender focused initiatives only since 1990, 1996, and 2002 respectively. Interestingly, the "proportion of women among first year [Swedish] economics students is… near parity" (p. 176) but most of these women tend to shift their major to business administration after their first semester of study, such that the percentage of female economics graduates is around 30%. Jonung and Ståhlberg (2008) suggest these numbers will only change when women economists become more visible as professors, researchers, and public officials, and the field of economics is seen to be a "realistic, attractive and profitable career option [for women]" (p. 182; Jonung & Ståhlberg, 2009). This role-model effect is a self-sustaining model for gender balance and diversity (Hopkins 2004). Economics suffers the same challenge for gender balance as engineering.

LAW

The legal profession has realized enormous successes in both gender balance and cultural diversity. In the three decades following 1970, the year the Association of American Law Schools prohibited sex discrimination in its member schools' admissions policies, the percentage of women applying to American law schools rose from near zero to roughly 50% of applicants (Marek, 1999), and the number of women practicing law increased from 10,000 to almost 300,000, almost 27% of the entire American profession of law (Woodington, 2010; Dau-Schmidt, Galanter, Mukhopadhaya & Hull, 2008). This achievement may have been simply the result of opening the law school gates to women but is more likely related to the increased number of female lawyer role models in popular fiction during the same period. In movies and television programs like *Ally McBeal*, *LA Law*, and *The Practice*, women attorneys were presented as normal and accepted participants in law offices (Epstein, 1999; Machlowitz, 1982; Marek, 1999; Tsavdaridis, 2002). Popular television shapes the morals and values of children by teaching expected gender roles (List, Collins & Westby, 1983); these programs created the new normal standard of practice. Retention of female lawyers occurred because law firm executive officers realized that diverse clients require diverse lawyers who can relate directly to their ethnicity or gender, and thereby understand the corresponding issues that require the need of a lawyer (Webley, 2010).

If gender balance in undergraduate applications to law school may be attributed to increased visibility of role models, then gender balance in lawyers must be attributed first to the requirement of gender diversity for a law firm's survival by fostering "confidence in all sections of society, so as to be able to represent them effectively" (Webley, 2010, p. 224). Many large urban law firms regularly consider means to attract and retain professionals from diverse gender, ethnicity and backgrounds. Formal support networks, bursaries, outreach programs in schools, and other initiatives that exist among law professionals sustain diversity; however persistent gender stereotypes and prejudices prolong the tendency among senior partners to hire only from their personal networks and traditional institutions (Woodington, 2010). These cultural barriers threaten the advances in gender diversity made in the profession of law. Although more women are applying to law school, they are still constrained by gender schemas that expect them both to work long hours and to perform primary care-giving roles in the family. For this reason, women lawyers continue to be limited in career advancement opportunities (Bacik & Drew, 2006; Krakauer & Chen, 2003; Wald, 2010; Viswanatha, 2006). "Feminization of the legal professions started later than many other professions (for example the medical profession)" (Silius, 2003, p. 136), and has achieved gender balance in graduation classes, yet as in accounting the percentage of women practicing law is insufficient to ensure gender equality throughout the profession.

> "Medical doctors, psychologists, lawyers, clergymen, biologists, and veterinarians are examples of occupations where today in many countries we [now] see a majority of women"
>
> (Jonung & Ståhlberg, 2008, p. 64).

MEDICINE

The first female physicians in modern history were very few in number but were granted formal medical qualifications and the ability to practice medicine as early as 1849. Prior to that and since then, women practiced medicine unofficially, most notably through midwifery and nursing but also "in rural 'family practices', dispensing, bone-setting and practicing minor surgery" (Summers, 1991). The gender divide coincided with the introduction of the US Medical Act of 1858, after which unlicensed medical practices were marginalized. Since then, medical school has seen a slow but steady increase in the number of women studying to be doctors. Gender balance is recognized as a requirement in medicine because male and female doctors provide different services to patients: women tend to provide more preventative services and psychological counseling while male doctors spend more time on technical practice behaviours (Bertakis, 2009). Over 50% of first-year undergraduate students in Canadian medical schools are women, and 2008 Canadian statistics show that about 36% of doctors in practice were women, a jump of 23% from 2007. Women comprise 40% of family physicians, but 30% of Canadian specialists ("Number of Doctors", n.d.; National Physician Survey, 2010). With the current graduation rates, women should account for 50% of practicing physicians by the year 2030 (Buske, 1997).

Yet all is not perfect in the medical profession. Physician job satisfaction is low and movement among doctors is commonplace as they search for fit within the profession (Solberg, Ro, Aasland, Gude, Maum, Vablum, & Tyssen, 2012). Gender discrimination in pay exists in many countries: "in 2008 the income of [English] female GPs was 70%, and their wages (income per hour) were 89%, of those of male GPs" (Gravelle, Hole & Santos, 2009, p. 660). Some possible reasons for the difference

in gross earnings include "patient preferences for [male] GP gender, selection of female GPs into less lucrative practices [low income neighbourhoods, for example]…and preference or productivity differences between male and female GPs" (p. 669; Whitmarsh & Wentworth, 2012). Similar gender pay differences were found even when standardized against workload preferences, number of patients and number of hours worked.

Most women entering medical school avoid high-paying surgical careers for the same reason many men are avoiding the specialization: surgery is not "perceived as a lifestyle-friendly specialty choice" (Rogers, 2012, p. 1; Park, Minor, Taylor, Vikis & Poenaru, 2005). Additional reasons women avoid surgical practice include lack of role models, gender-based discrimination and male domination, as well as the need to postpone having children (Park, et al., 2005; Adamo, 2013). For these reasons, Australia, Canada and the US are experiencing a decline in surgeon graduates which may result in a shortage of specialists within the decade.

Popular fiction has been successful in continuing to promote the medical profession to women, with television shows like *Dr. Quinn, Medicine Woman*, *Bramwell*, *Doc McStuffins,* and more recently, *The Mindy Project* portraying women and minorities as positive role models who are accepted as physicians in their presented societies (Elber, 2012; Greenfield, 2003; Keveney, 2012). While female medical doctors existed throughout the ages, cultural shifts in values and understanding are less necessary than in engineering and economics for maintaining general practitioners, but equally necessary to attract and retain men and women to study as medical specialists.

THE BUSINESS CASE – PRODUCTIVITY, PROFITABILITY, AND ORGANIZATIONAL HEALTH

Several key organizational attributes improve with gender balance, most notably job satisfaction, increased productivity, employee retention, and client relationships.

JOB SATISFACTION

Businesses are more successful with near gender balance because job satisfaction is maximized. Issues arise when either gender is a minority. The Australian Commonwealth Public Service (APS) is grappling with the increasing feminisation of its workforce. Recent management changes created opportunities for advancement by flattening the organization, such that the APS now has a flexible structure with formalized promotions and tolerant culture, which they found meets the needs of most women more than most men. The APS is now focussed on trying to attract more men and increase the job satisfaction of male staff at all levels, executive and below. What this highlights is that perceptions of job satisfaction requirements are different for women than for men. Developing only one set of aspects creates dissatisfaction for all because unidentifiable criteria are missing. Therefore, it is important to meet both groups' needs for all to be satisfied (Lindorff, 2010). .

Job satisfaction is associated with a myriad of positive outcomes including improvements in job performance, attendance, organizational commitment, retention, productivity, profitability and safety, not to mention customer satisfaction, and general well being (Jayanthi & Vanniarajan, 2012).

While articles and surveys have disagreed with tendencies towards different requirements for job satisfaction between men and women, Lindorff tested the "relationship between satisfaction with remuneration and overall job satisfaction…and whether this differs by gender" (2010, p. 60). Lindorff's results indicate women find greater job satisfaction with career progression remuneration, learning and development opportunities, job security, role clarity and level of authority; men in the APS find more satisfaction in performance facilitation, agency leadership and governance. In all other areas but one, there were no gender differences in attitudes (Lindorff, 2010). However, men, more than women, indicated they valued and needed improved perceptions of work-family balance (Dau-Schmidt, 2008).

> "Markets are becoming as diverse as the workforce"
>
> (Cox & Blake, 1991, p. 49)

PRODUCTIVITY

Organizations are more productive, profitable, and have healthier cultures when executive structure contains gender diversity (Cox & Blake, 1991). As CEO of Harris Beach PLLC, Spitz (2012) realized that "diverse thinking, teamwork, and the ability to deal with differences [are necessary in order to] fulfill our mission of providing client solutions that exceed expectations" (p. 62). Heterogeneous groups tend to experience greater creativity and produce higher quality process and decisions (Härtel & Fujimoto, 1999). Diversity is necessary across all job classifications and geographic locations to enable every team to be high-performing.

Of all teams, however, diverse corporate boards have the greatest impact on firm performance by heightening its overall ability to solve complex problems and make strategic decisions (Ujunwa, Okoyeuzu, and Nwakoby, 2012). Diversity lessens "the tendency for boards to engage in groupthink" (p. 605), in which efforts to reach consensus stymie meaningful discussion and debate about alternative courses of action. It is important to note that people tend to classify themselves according to gender, race or ethnicity and identify more with their sub-group, leading to in-group favouritism and sub-group role conflict; this unproductive tendency is virtually eliminated in diverse groups and with effective team management (Chow & Crawford, 2004; Cox & Blake, 1991). Corporate social responsibility that is focused on gender balance and work-family balance is an increasingly important strategic direction for most organizations (Stropnik, 2010).

James J. Schiro, CEO Price Waterhouse LLP, discovered that making a commitment to diversity brought a "greater range of ideas, approaches, experiences and abilities" because "6 people with different perspectives have a better shot at solving a complex problem than 60 people who all think alike" (Hooks, 1996, p. 51). Diverse groups create more effective decision-making processes (Chow & Crawford, 2004).

EMPLOYEE RETENTION

Diverse and flexible organizations maximize employee retention by enabling movement which in turn improves job satisfaction (Solberg et al., 2012). Family-friendly enterprises result in increased motivation, commitment, loyalty and satisfaction and lead to lower absenteeism and reduced staff turnover (Cox & Blake, 1991). In contrast, 28% of Slovenian employees "felt disadvantaged in the workplace due to their status [as] a parent" (Stropnik, 2010, p. 12).

Men and women perceive different levels of inclusion and belonging, so diversity within workgroups increases organizational inclusion and feelings of belonging because of the resulting bias-free processes and communication within the organization (Crawford & Chow, 2004). Organizational cultures with higher percentage of female employees and managers therefore have reduced employee turn-over, and improved employee wellness and satisfaction because of the ensuing improved morale. Indeed, one early analysis found that an organization's willingness to be flexible around employee needs at work resulted in fewer days lost to illness, in one case by pregnant workers who were subsequently more willing to work overtime during pregnancy (Cox & Blake, 1991). Similarly, organizations with established daycares realized 38% lower absenteeism and employee turnover rates as worker attitudes improved on "six measures, including organizational commitment and job satisfaction" (p. 48).

> "There is a tension here between the business case and cultural norms: in order to challenge the cultural norms one needs to be able to unpack and then interrogate them. The business case does nothing to achieve this. Instead it uses profit maximization as a means to tweak existing organizational structures rather than to change values"
>
> (Webley, 2010, p. 224)

CUSTOMER SATISFACTION

The call for diversity in Canada has moved from a legal requirement to a business necessity. As demographics shift, Canada's workforce becomes increasingly diverse in terms of gender and culture, a diversity that is representative of the clients and customers for whom professional service industries work (McFerran, 2006; Chow & Crawford, 2004). Organizations that have a diverse workforce provide a better customer match and can develop an extended and varied range of approaches to problem solving (Hersh, 2000). Formerly unprofitable domestic and global market sectors improve significantly when organizational diversity matches the demographics of that sector (Cox & Blake, 1991).

Diversity is a driving force for organizational change; many successful accounting firms have embraced gender diversity as a strategic direction based on client needs (Hooks, 1996). These firms responded to requests for service teams to match the diversity of their client's communities, and found they had improved their ability for creative problem solving and their opportunity for growth (Johnson et al., 2012). The law profession also discovered that gender diversity heightened their ability to best serve their clients and enabled them to be increasingly successful by serving a larger population (Webley, 2010).

PROFITABILITY

Since the 1970's, the number of women owning businesses has increased to the point that they now represent a significant segment of the economy (Collins-Dodd, Gordon & Smart, 2004). Comparisons of male and female businesses owners have shown that they differ on many counts, including risk-taking propensity, needs for achievement and autonomy, educational levels, experience levels, effectiveness of interpersonal relations, and communication skills. The primary difference between the genders of business owners is the complexity of female objectives for business ownership. Comparative studies of financial income are typically skewed by the small sample size and the lack of constraints; however one recent study which very carefully constrained the data to similar parameters (the intention of the business, whether the business rents or owns real estate, the preferred hours of work, the proprietor's level of experience, etc.) found no impact on the financial performance of sole proprietorship businesses based on the gender of the owners. Although the difference was not statistically significant, this study found sole-proprietor men had higher gross profit compared to women, but lower net profit.

Within this same study, the researchers found that female-owned accounting practices earned less net profit but were equally happy with their financial state as the male-owned practices that earned greater net profit. This does raise "the question of whether we should be concerned with [profitability] at all [as a performance measure]" (Collins-Dodd, Gordon & Smart, 2004, p. 410).

CONCLUSIONS

Women who study engineering are excited about science and about the opportunity to discover how science can be applied to make positive change in the world (Fox, 2003). Yet few of the women in engineering education transition to the workforce. Of the five professions explored in this paper, engineering is the most focused on applying scientific principles to solving problems and is not as driven by client perceptions of diversity as are medicine, law and accounting. The engineering profession remains susceptible to the leaky pipeline that occurs at 5-7 years experience when many of the women who enter the workforce leave (Fender et al. 2011). The tide needs to be stemmed in order to capture the energy, creativity and diversity of thought necessary to productively solve the challenging problems that await engineers.

With impending shortages in all professions, recruiting and retaining women into the workforce is necessary. The experiences of sister professions informs the strategic decisions engineers can make to prepare for the greatest possible future. Diverse engineering teams will best serve diverse customers and clients, find creative solutions to increasingly complex problems, and realize more satisfying business success. Improvements in organizational culture, work-life balance, social interactions, and family supports will enhance job satisfaction and increase retention of both sexes by reducing movement of professionals and employee turnover. Realistic and positive student expectations will result in improvements in long-term retention of graduates in the engineering field by ensuring realistic and positive educational and practical experiences occur at the universities. Engineering companies that learn to practice openness and flexibility in the work

environment, as demonstrated in medicine, accounting and law, will achieve the necessary increased diversity and all the subsequent organizational improvements. Successful strategies for building capacity for gender balance include encouraging or motivating the creative development of television programs that portray positive role models of men and women in engineering and science.

Recognizing the importance of supporting the needs of all members within the profession, Canadian Engineers will create an environment to attract people to and facilitate careers in professional engineering and geoscience (APEGBC, 2012). Meeting the needs of all members will create an environment that is welcoming to all and the promise of a bright future for the profession of engineering. Gender balance in engineering is an issue worth pursuing.

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