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ORIGINAL SCIENTIFIC PAPER

Unlocking Innovation in Women-Owned Firms: Strategies for Educating the Next Generation of Women Entrepreneurs

Podsticanje inovacija u firmama koje su u vlasništvu žena: Strategije za obrazovanje namenjene novim generacijama žena preduzetnica

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A B S T R A C T

In this article we report on the results of a survey of innovative practices in a sample of U.S. firms. Survey results reveal gender differences in the areas of both human and social capital. In the area of human capital, women were less likely to have advanced degrees or senior management experience. In the area of social capital, although a high percentage of women engaged in networking activities, there is some evidence that their networking strategies were less targeted than those of men. Consistent with prior research, women entrepreneurs had lower levels of "self-efficacy" or confidence in their ability to identify and develop innovative ideas. The implications of these findings for the education and training of women entrepreneurs are discussed.

KEW WORDS: *women, gender differences, human capital, education*

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Introduction

One of the most exciting aspects of entrepreneurial research in recent years has dealt with the rapid growth and increasing economic influence of women-owned firms. Census data from the 2007 Survey of Business Owners reveals that in 2007 there were 7.8 million women-owned firms in the United States generating revenues of $1.2 billion (Table 1). These numbers represent a 44 percent growth rate in number of firms and a 46 percent growth rate in revenues from 1997-2007. Thus, the number of women-owned firms in the United States has grown more rapidly than the number of firms overall.

Table 1
U.S. Nonfarm Firms by Gender and Ownership, 1997-2007

As Published		All Firms		Firms with paid Employees			
		Firms (Number)	Receipts (Millions of dollars)	Firms (number)	Receipts (millions of dollars)	Employees (number)	Annual payroll (millions of dollars)
Women-owned firms							
	2007 [1]	7,793,425	1,192,781	911,285	1,010,470	7,587,020	218,136
	2002 [1]	6,489,483	940,775	916,768	804,097	7,146,229	173,709
	1997 [2]	5,417,034	818,669	846,780	717,764	7,076,081	149,116
	growth 2002-2007	20.1%	26.8%	-0.6%	25.7%	6.2%	25.6%
	growth 1997-2002	19.8%	14.9%	8.3%	12.0%	1.0%	16.5%
	growth 1997-2007	43.9%	45.7%	7.6%	40.8%	7.2%	46.3%
All U.S. firms							
	2007 [1]	27,110,362	30,181,461	5,752,975	29,208,766	118,668,699	4,886,977
	2002 [1]	22,974,685	22,627,167	5,524,813	21,859,758	110,786,416	3,813,488
	1997 [2]	20,821,934	18,553,243	5,295,151	17,907,940	103,359,815	2,936,493
	growth 2002-2007	18.0%	33.4%	4.1%	33.6%	7.1%	28.1%
	growth 1997-2002	10.3%	22.0%	4.3%	22.1%	7.2%	29.9%
	growth 1997-2007	30.2%	62.7%	8.6%	63.1%	14.8%	66.4%
Percent of total U.S. firms							
	Women-owned (2007)	28.7%	4.0%	15.8%	3.5%	6.4%	4.5%
	Women-owned (2002)	28.2%	4.2%	16.6%	3.7%	6.5%	4.6%

[1] 2007 and 2002 Survey of Business Owners, Women-owned Firms.
[2] 1997 Survey of Women-owned Business Enterprises.

From the standpoint of industry distribution, women-owned firms are increasingly represented in all sectors of the economy, including traditionally male-dominated fields such as manufacturing, construction, transportation, and the professional, scientific, and technical fields (Table 2). Researchers point to the growing number of women who are launching growth-oriented firms with the potential to provide substantial gains in employment and wealth (Brush et al., 2001).

Table 2
Statistics for U.S. Firms by Gender and Industry Sector

Industry	Number of Firms	% of firms	Receipts (in thousands)	Employer Firms	Employer receipts (in thousands)	Employees	Payroll (in thousands)
Other services (except public administration)	1,251,887	16.1%	44,776,978	77,099	20,938,687	367,061	7,194,960
Health care and social assistance	1,231,818	15.8%	92,333,985	127,288	69,213,619	1,129,941	28,887,188
Professional, scientific, and technical services	1,096,581	14.1%	107,075,468	142,547	77,435,625	632,383	28,216,630
Retail trade	918,701	11.8%	190,161,925	126,445	171,031,385	836,423	17,835,446
Administrative and Support and Waste Management and Remediation Services	785,909	10.1%	65,608,979	63,776	53,874,916	1,150,811	26,691,160
Real estate and rental and leasing	657,584	8.4%	58,622,207	56,523	29,127,294	183,147	5,734,316
Arts, entertainment, and recreation	376,196	4.8%	16,452,268	18,705	9,716,544	114,425	3,045,367
Educational services	276,059	3.5%	9,797,590	16,439	6,794,998	127,217	2,556,407
Construction	268,668	3.4%	96,889,179	54,067	87,883,713	492,327	21,126,808
Finance and insurance	200,443	2.6%	32,062,328	35,019	24,682,660	160,114	6,910,973
Accommodation and food services	191,798	2.5%	47,183,720	85,771	43,907,019	956,836	12,222,971
Transportation and warehousing	142,562	1.8%	32,848,960	19,474	27,867,264	215,983	7,049,792
Wholesale trade	133,353	1.7%	245,268,823	38,748	240,320,377	378,118	15,680,349
Manufacturing	113,400	1.5%	113,527,429	33,694	111,281,456	567,776	20,481,347
Information	97,172	1.2%	25,838,659	9,273	23,772,089	118,477	6,153,076
Agriculture, forestry, fishing and hunting	26,778	0.3%	2,033,212	1,773	1,308,563	9,626	263,563
Mining, quarrying, and oil and gas extraction	18,331	0.2%	11,544,745	1,704	10,694,301	22,961	1,012,270
Utilities	3,761	0.0%	1,772,759	205	1,707,047	1,769	79,957
Industries not classified	2,756	0.0%	178,780	2,756	178,780	3,828	49,695
Management of companies and enterprises	1,752	0.0%	2,630,011	1,752	2,630,011	50,897	3,481,125
Total for all sectors	7,792,115	100.0%	1,196,608,004	909,661	1,014,366,348	7,520,121	214,673,400

Source: 2007 Survey of Business Owners

A number of factors have played a role in the increasing numbers of women launching innovative and growth-oriented firms. First, educational initiatives have contributed to the increasing number of women seeking careers and entrepreneurial opportunities in non-traditional and technology-based fields. Traditionally, girls and young women have shied away from math and quantitative types of subjects, preferring instead to focus on the liberal arts, education, or "helping professions" such as nursing and social work (Correll, 2001; Staniec, 2004; Zafar, 2009). In recent years, however, we have seen increased efforts to engage girls and young women more fully in the STEM fields (science, technology, engineering, and math). Programs to achieve this purpose have proliferated at the local, state, and federal levels with impressive results.

A second reason for this change is the growing number of women entrepreneurs who can serve as role models and mentors for those who follow. A simple prescription might be "if you want more women, get more women!" Many academic and professional groups are establishing women's special interest groups which provide women with the opportunity to network, share information, and learn from their peers. Groups such as Springboard Enterprises

(http://www.springboardenterprises.org) and Astia (http://www.astia.org) bring growth-oriented women entrepreneurs together and provide both training and access to networks and key contacts. Similarly, the Society of Women Engineers (SWE) targets women in the fields of engineering, engineering technology, and computer science. Its mission is to empower women to succeed and advance in the field of engineering through training and development programs, networking opportunities, scholarships, outreach, and advocacy activities (http://www.swe.org).

Finally, funding sources are beginning to open up more, albeit slowly, to women entrepreneurs in growth-oriented sectors such as bioscience and technology. There are a growing number of venture capital firms such as Golden Seeds (http://www.goldenseeds.com) and angel investor groups that specifically target women-owned firms. Recent research suggests that women entrepreneurs who seek out angel investor financing have an equal chance of getting it (Becker-Blease & Sohl, 2007). Nevertheless, researchers have found that only 5 percent of venture capital funding goes to women-owned firms, although women-owned firms actually represent a much higher percentage of total firms (Brush et al., 2001).

Yet, even with the progress that has been made, women entrepreneurs continue to lag men in the launch and development of innovative and growth-oriented firms, leading us to hypothesize that resource differences and needs in the areas of financial, human, and social capital persist. Census data reveals that, although the number of women-owned firms has increased rapidly in the last decade, those firms have remained very small on average. Further, as Table 1 illustrates, revenues generated by women-owned firms represent only 4 percent of the revenues generated by all firms. In terms of industry concentration, although women have made inroads into growth-oriented sectors such as bioscience and technology, they continue to be heavily represented in lower growth service and retail sectors (Table 2). These size and industry gaps between women-and men-owned firms represent opportunities for women entrepreneurs going forward. In light of that, our question becomes "How can we address and exploit those opportunities?"

Within the framework of this article, we will focus on issues of human and social capital by exploring the educational, training, and support needs of women seeking to launch innovative firms. In doing so,

we will utilize data on innovative practices from a sample of male and female entrepreneurs in the United States.

Prior Research

The Role of Education, Experience, and Attitudes

Human capital refers to the education and experience that individuals accumulate, and it is an essential ingredient for entrepreneurial success (Coleman, 2005; Ibid., 2007; Schiller & Crewson, 1997; Watson et al., 1998). Prior research indicates, however, that women entrepreneurs often have different types of human capital than men (Boden & Nucci, 2000; Fairlie & Robb, 2009). In terms of educational background, although more women than men actually attend college (*National Center for Education Statistics Fast Facts*, 2009), women tend to choose different majors. Specifically, women are less likely to major in business, engineering, or computer science, all fields that tend to supply a steady stream of aspiring entrepreneurs (Bobbitt-Zeher, 2007; Menzies et al., 2004; Zafar, 2009). Census data also reveals that women are significantly less likely than men to have advanced degrees which could lead to specialized knowledge in highly skilled growth-oriented fields.

Previous studies suggest that prior employment as well as managerial and entrepreneurial experience are just as important, if not more so, than education in predicting the success of new ventures (Boden & Nucci, 2000; Carter et al., 1997). Prior experience gives entrepreneurs confidence and provides them with a "tool kit" for dealing with a broad range of challenges. Although a high percentage of women are in the workforce today, few rise beyond the ranks of middle managers (Cross & Linehan, 2006; Daniel, 2004; Tai & Sims, 2005). Thus, few women have the opportunity to acquire experience at the most senior ranks of organizations.

In light of these factors, it is probably not surprising that there is a significantly smaller percentage of women entrepreneurs than men (Minniti, 2010; Reynolds, 2002). Further, the majority of highly innovative and growth-oriented entrepreneurial ventures that eventually become household names such as Facebook, Amazon.com, Apple Computer, Microsoft, and Google, are launched by men. Some researchers have found that when women do join innovative firms, particularly those in male-dominated fields, they often feel isolated and describe an environment that

is hostile and unwelcoming (Crump et al., 2007; Treanor et al., 2010). The upshot is that many leave not only the firm, but the industry as well (Becker-Blease et al., 2010).

Another area where differences have been noted between women and men is the area of self confidence or "self-efficacy". Self-efficacy refers to the belief that one has the necessary skills to launch and successfully manage a business (Boyd & Vozikis, 1994). Prior research suggests that women entrepreneurs may not have the same level of self confidence as men (Allen et al., 2008; Wilson et al., 2007; Wilson et al., 2009). This perception may, in turn, hamper them from believing in their own abilities to develop innovative opportunities. Interestingly enough, women are also less likely to even characterize themselves as entrepreneurs than men. Thus, women may be less likely to view themselves as being innovative or creative.

Previous studies also attest to the fact that many women entrepreneurs continue to have an ambivalent attitude toward the rapid growth that one often associates with highly successful innovative companies (Cliff, 1998; Morris et al. 2006; Orser & Hogarth-Scott, 2002; Watson & Newby, 2005). Unlike men, women are less likely to define success in terms of firm size and earnings (Carter et al., 2003; Kepler & Shane, 2007). Alternatively, they are more concerned with the risks associated with rapid growth and a loss of control, and they prefer a more moderate and manageable rate of growth for their firms. Prior research also suggests that a number of women start their firms with the specific objective of balancing the demands of work and family (Walker & Webster, 2004; Walker et al., 2008). In light of that goal, women may be less likely to embrace the demands of rapid growth which could interfere with family priorities (Cliff, 1998; Morris et al., 2006).

An Assessment of Education and Training Programs for Women Entrepreneurs

There is a general agreement by researchers that entrepreneurship can be taught (Henry et al., 2005; Vesper, 1982). At the same time, there is little consistency in terms of opinions on how it should be taught (Sexton et al., 1997) leading to a broad array of educational programs. A number of researchers have pointed out that efforts to evaluate education and training programs and to identify best practices have been weak or lacking in many instances (Henry et al., 2007; McMullan et al., 2001; Storey, 2000). In

spite of these shortcomings, certain themes regarding educational and training needs and priorities for women entrepreneurs have emerged.

For starters, a review of empirical studies addressing the impact of education on entrepreneurial selection and performance found that higher levels of education raise enterprise income (Van der Sluis et al., 2005). Further, this effect was particularly pronounced for women. In terms of specific skills and competencies, one study of women entrepreneurs in Ireland identified the importance of building self-confidence and greater self-esteem (Tynan et al., 2009). This same study noted the importance of developing networking skills and involving female advisors and mentors in training. In their "lessons learned" these researchers concluded that training programs for women entrepreneurs need to develop both "soft skills" such as confidence building, work/life balance, and networking, as well as "hard skills" directed to content areas such as strategy, finance, sales, and marketing. A second study of middle, high school, and MBA students also focused on the issue of self confidence, and found that entrepreneurship education played a key role in raising levels of self-efficacy in girls and young women (Wilson et al., 2007). This, in turn, encouraged more young women to pursue entrepreneurship.

Several studies have specifically examined the educational and training needs of women growth-oriented and technology-based firms. A literature review on women in the information technology field noted that women lack access to networks that would help them advance their careers and gain valuable experience (Ahuja, 2002). This same article noted a lack of role models and mentors as well as guidance on strategies for balancing work and family. A study of the needs and preferences for training among growth-oriented women entrepreneurs in England found a high level of demand for programs focusing on innovation and opportunity recognition (Roomi & Harrison, 2008). Respondents also expressed a desire for training that would help them develop networking and negotiating skills. In a subsequent study, these same authors found that a high percentage of women felt that appropriate business training was an important contributor to firm growth (Roomi et al., 2009). Nevertheless, only 41 percent of the participants in the study had actually received such training, leading the authors to call for the development of specific business and technical training programs for growth-oriented women entrepreneurs.

A study of gender differences in patenting found that the gap between female and male faculty in the life sciences is narrowing (Ding et

al., 2006). Nevertheless, women faculty secure patents at only 40 percent of the rate of men. The authors of this study found that women are disadvantaged by lack of exposure to the commercial sector and contacts in industry. Similarly, a later study of Irish entrepreneurs found that women were under-represented in campus incubator programs which could provide access to training and key contacts as well as services (Treanor & Henry, 2010).

Our review of prior research seems to point to differences between women and men entrepreneurs in the areas of human and social capital that lend themselves to opportunities for education and training. In particular, women appear to benefit from programs that increase self confidence or "self-efficacy". Further, they express a desire for programs that will help them build their skills in the areas of networking, negotiations, and managing the work/life balance. Finally, there is some evidence that women benefit from education and training in specific business skills as well as skills that will help them to recognize, develop, and commercialize innovative opportunities. In this article we will explore the extent to which women entrepreneurs engage in innovation as well as the ways in which they innovate. Further, through our findings, we will expand upon the collective understanding of the educational and training needs of women entrepreneurs as they relate to recognizing and developing innovative ideas.

Data and Characteristics

Data for this research were drawn from a study on innovation in women-owned firms sponsored by the United Nations Commission on Trade and Development (UNCTAD). The U.S. survey was administered electronically using Survey Monkey in November of 2010. Participants were drawn from a variety of groups targeting entrepreneurs, small firms, and women business owners. These included the National Association of Women Business Owners, the Women's Business Enterprise National Council, the Women Presidents' Organization, and Xconomy.com. Firms were also drawn from the U.S. Small Business Administration's Dynamic Small Business Search listing and through social networking sites such as Facebook, LinkedIn, and Twitter. A total of 196 usable surveys were returned; 69 from men and 127 from women.

Several of the questions in the survey targeted demographic and firm information. Women business owners were somewhat older than men business owners. This finding suggests that women may postpone launching their firms until they no longer have young children in the home.

What is your current age?	**Female**	**Male**
	Percent	
25-34	3.2%	11.6%
35-44	26.2%	20.3%
45-54	30.2%	24.6%
55-64	31.7%	33.3%
65 or older	8.7%	10.1%
Answered question	**126**	**69**
Skipped question	**1**	**0**

Both women and men entrepreneurs in our survey were well educated overall; over 80 percent completed a college or post-graduate degree program. Thus, both women and men possessed relatively high levels of human capital in the form of education. Men were more likely to have completed a master's, doctorate, or other graduate degree than women, however (58% vs. 49.6%).

What is the highest level of education you have achieved?	**Female**	**Male**
	Percent	
Secondary school or less	0.8%	0.0%
Some college or similar	16.5%	14.5%
Bachelor's degree	33.1%	27.5%
Post-graduate degree (master's, doctorate, other graduate degree)	49.6%	58.0%
Answered question	**127**	**69**
Skipped question	**0**	**0**

The owners in our survey are more highly educated than business owners overall, but these patterns are similar to those from the 2007 Survey of Business Owners. As shown in Table 3, about a quarter of business owners had a college degree, regardless of gender. However, men were more likely to have a graduate degree than women (19.9% vs. 16.2%).

Table 3: Education by Gender

	Female		Male	
Highest level of school completed prior to acquiring business	Firms (number)	Firms (%)	Firms (number)	Firms (%)
Less than high school graduate	324,706	4.3	721,696	5.8
High school graduate – diploma or GED	1,573,922	21.0	2,542,513	20.3
Technical, trade, or vocational school	524,562	7.0	740,802	5.9
Some college, but no degree	1,375,383	18.3	2,026,840	16.2
Associate degree	559,521	7.5	625,763	5.0
Bachelor's degree	1,921,495	25.6	3,356,255	26.9
Master's, doctorate, or professional degree	1,216,974	16.2	2,481,564	19.9
Total reporting	7,496,563	100.0	12,495,433	100.0
All owners of respondent firms	7,650,490		12,772,930	

Source: 2007 Survey of Business Owners

Yet, in spite of their relatively high levels of educational attainment, women entrepreneurs were less likely to have human capital in the form of prior senior management experience (31.7% vs. 41.2%). This finding is consistent with prior research indicating that, in spite of gains in the workplace, women have still not fully penetrated the senior ranks of management (Becker-Blease et al., 2010).

Which ONE of the following best describes the position you held immediately prior to starting this business?	**Female**	**Male**
	Percent	
Executive or senior management in another business/organization	31.7%	41.2%
Middle management	25.2%	22.1%
Professional (doctor, attorney, etc	17.1%	13.2%
Technical/clerical/service position	6.5%	8.8%
Student or teacher	7.3%	8.8%
Out of the workforce	3.3%	1.5%
Owner of another business	8.9%	4.4%
Other (please specify)	4.1%	2.9%
Answered question	**123**	**68**
Skipped question	**4**	**1**

Our findings revealed that women were much more likely to be the sole owners of their firms than men (68.8% vs. 33.8%). This has

implications for the level of resources available to the firm in the form of human, social, and financial capital. It stands to reason that multiple owners would provide a broader, and possibly deeper, range of both education and experience. Further, sole owners might have a more difficult time participating in activities that would help to develop human or social capital.

How many other people or organizations currently have an ownership share in your business, excluding you?	**Female**	**Male**
	Percent	
0	68.8%	33.8%
1	16.8%	22.1%
2	8.8%	10.3%
3 or more	5.6%	33.8%
Answered question	**125**	**68**
Skipped question	**2**	**1**

From the standpoint of firm characteristics, and consistent with prior research, our survey results revealed noteworthy gender differences in industry concentration, as well as size, in terms of both sales and number of employees. Women-owned firms were less likely to be in the fields of manufacturing, information and communication, and professional/scientific/technical activities and more likely to be in retail and service industries and finance and insurance.

In what industry is your business?	**Female**	**Male**
	Percent	
Manufacturing	5.5%	11.1%
Water supply; sewage, waste management and remediation activities	1.8%	0.0%
Construction	2.7%	4.8%
Wholesale and retail trade; repair of motor vehicles and motorcycles	4.5%	1.6%
Transportation and storage	2.7%	0.0%
Accommodation and food service activities	1.8%	4.8%
Information and communication	8.2%	25.4%
Finance and insurance	6.4%	1.6%
Real estate activities	3.6%	1.6%

Professional, scientific and technical activities	25.5%	31.7%
Administrative support service activities	6.4%	0.0%
Education	3.6%	0.0%
Human health and social work activities	5.5%	4.8%
Arts, entertainment, recreation	3.6%	4.8%
Other service activities	18.2%	7.9%
Answered question	**110**	**63**
Skipped question	**17**	**6**

Nearly 40 percent of women-owned firms had revenues of less than $50,000 per year, compared with just over 30 percent of businesses owned by men. Also, a substantially higher percentage of men-owned firms had revenues in excess of $1 million (27.9% vs. 15.6%).

What were the approximate sales of your business in 2009?		
	Female	**Male**
	Percent	
Under $50,000	39.1%	30.9%
$50,000 - $99,999	14.8%	8.8%
$100,000 - $249,999	13.0%	14.7%
$250,000 - $499,999	6.1%	4.4%
$500,000 - $999,999	11.3%	13.2%
$1,000,000 - $4,999,999	11.3%	17.6%
$5,000,000 or more	4.3%	10.3%
Answered question	**115**	**68**
Skipped question	**12**	**1**

The pattern of employment was similar. Women entrepreneurs were more likely to have no employees aside from themselves (36.2% vs. 23.2%) and a much higher percentage of men-owned firms had more than 50 employees (11.6% vs. 1.6%).

How many full-time equivalent employees (including part-time and contract workers) does your primary business currently employ, not including yourself?	Female	Male
	Percent	
None in addition to myself	36.2%	23.2%
1-4 employees	37.0%	31.9%
5-9 employees	11.8%	15.9%
10-49 employees	13.4%	17.4%
50+ employees	1.6%	11.6%
Answered question	**127**	**69**
Skipped question	**0**	**0**

There were also substantial gender differences in the growth intentions of survey respondents. Women were significantly more likely to say that they wanted steady growth over the next five years than men (63.9% vs. 49.3%). Conversely, a much higher percentage of male business owners sought to grow their businesses into large enterprises that would eventually be sold or taken public (33.3% vs. 16.4%).

Which ONE of the following comes closest to describing your business growth strategy over the next five years?	Female	Male
	Percent	
To maintain your business at its current size, mainly to provide income for your family and your employees	9.0%	10.1%
To grow your business at a steady rate to provide increasing opportunities for your employees and the community.	63.9%	49.3%
To grow your business into a large enterprise that may someday be sold or go public	16.4%	33.3%
To prepare to sell or close	9.0%	5.8%
To pass on your business to your children	1.6%	1.4%
Answered question	**122**	**69**
Skipped question	**5**	**0**

Motivations for starting the business were also quite different by gender. Male business owners were more likely to state that their motivation was the need they saw in the market for an entirely new product or service compared to women (23.9% vs. 5.8%). Nearly 20 percent of

women said their main motivation was to fulfill a dream or realize a passion, compared with just 12 percent of male business owners. Consistent with earlier studies, women were also almost twice as likely as men to cite greater flexibility or control over time as their motivation (14% vs. 7.5%).

Which of the following comes closest to describing why you started your	**Female**	**Male**
	Percent	
To fill a need I saw in the market for an entirely new	5.8%	23.9%
To fill a need I saw in the market for an improvement in an existing product/service	17.4%	14.9%
Because I identified a very profitable area for business (low wages, cheap inputs, new fashion)	5.0%	1.5%
To make more money	3.3%	9.0%
To gain greater flexibility, control of my time	14.0%	7.5%
To become more independent/ To do for myself what I had been doing for others	24.0%	22.4%
To fulfill a dream, realize a passion	19.8%	11.9%
To supplement the family income	0.0%	1.5%
To be example for my children or in society	4.1%	0.0%
Because I did not have any other choice/ Lost job, laid off/ To	5.0%	6.0%
I inherited the business from another person	1.7%	1.5%
Answered question	**121**	**67**
Skipped question	**6**	**2**

Educational and Training Needs and Priorities

Several of the questions in our survey provide valuable insights into the educational and training needs of women entrepreneurs. One question, in particular, targeted their views on innovation and creativity as it applied to themselves. We found that women had similar views to men in terms of the importance of innovation and creativity in the operation of their businesses. Nevertheless, they had very different views on their own abilities to be innovative or creative.

Women were more likely to agree or strongly agree with the statement that they had some innovative ideas, but didn't know how to

implement them (40.5% vs. 25.7%). This finding may suggest that women have less confidence in their ability to innovate than men. Alternatively, it may suggest that women have less knowledge and experience in terms of transforming innovative ideas into business opportunities.

Women were also more likely to agree or strongly agree with the statement that they could be more innovative if they had more examples or role models, or if they could take part in some type of educational program (38.7% vs. 30.9%). These responses highlight the importance of role models and mentors for women entrepreneurs, a finding that is consistent with prior research. They also reflect the value that women place on education as a means for achieving their goals as well as their willingness to participate in educational programs and activities.

Here are some statements that business owners have made concerning their views on innovation and creativity. For each one, please tell us if you strongly agree, agree somewhat, disagree somewhat, or strongly disagree.

Females	**4. strongly agree**	**3. agree somewhat**	**2. disagree somewhat**	**1. strongly disagree**	**I don't know**
Innovation and creativity are important tenets of my business operation	73.2%	23.6%	3.1%	0.0%	0.0%
Being innovative takes too much time and money, and is not very important to my business at this time.	0.0%	4.0%	17.6%	76.8%	1.6%
It's much easier for larger businesses to be innovative than for smaller firms.	6.3%	15.7%	24.4%	53.5%	0.8%
I have some innovative ideas, but I don't know how to implement them	4.8%	35.7%	27.8%	32.5%	0.8%
I could be more innovative in my business if I had more examples or role models from other businesses, or by participating in an educational program.	8.1%	30.6%	29.0%	29.8%	4.8%
Answered question					**127**
Skipped question					**0**

Males	**4. strongly agree**	**3. agree somewhat**	**2. disagree somewhat**	**1. strongly disagree**	**I don't know**
Innovation and creativity are important tenets of my business operation	73.5%	25.0%	1.5%	0.0%	0.0%
Being innovative takes too much time and money, and is not very important to my business at this time.	0.0%	2.9%	14.7%	82.4%	0.0%
It's much easier for larger businesses to be innovative than for smaller firms.	1.5%	11.8%	22.1%	64.7%	0.0%
I have some innovative ideas, but I don't know how to implement them	4.5%	21.2%	24.2%	48.5%	1.5%
I could be more innovative in my business if I had more examples or role models from other businesses, or by participating in an educational program.	4.4%	26.5%	22.1%	41.2%	5.9%
Answered question					**68**
Skipped question					**1**

Consistent with the responses for the previous question, our findings also revealed that women were more likely to attend different types of training sessions than men. As suggested by prior research, education and training provide a way for women to gain the types of human capital that will help them succeed as entrepreneurs. Further, education and training can help women gain confidence in their skills and abilities as they simultaneously acquire new ones.

Women were also more likely to join a business chamber, association, or cooperative than men (85.7% vs. 67.2%). This finding highlights the fact that women recognize the value of social capital and are willing to invest the time and energy required to build and sustain key networks and contacts.

Men were much more likely to participate in a trade fair in the U.S. (57.4% vs. 31%) or in a trade mission to another country (16.4% vs. 4%). Men were also more likely than women to take part in a government sponsored business development or assistance program (23% vs. 11.9%).

These discrepancies suggest areas of opportunity for women entrepreneurs. Trade fairs can open up new markets leading to firm growth and profits, while government programs often provide a mix of resources in the form of financial, human, and social capital. Many involve training and educational activities, the development of networks and contacts, and access to business opportunities and markets.

Have you ever done any of the following since you started your business? If yes, please check those that were really effective for your business.		
	Female	**Male**
	Percent	
Joined a business chamber, association or cooperative	85.7%	67.2%
Attended a training session or class focused on entrepreneurial skills	67.5%	44.3%
Attended a training session or class focused on general business management skills	47.6%	32.8%
Attended a training session or class focused on marketing and sales skills	64.3%	34.4%
Attended a training session or class focused on financial management skills	38.1%	19.7%
Attended a training session or class focused on technology or innovative topics	47.6%	36.1%
Participated in a trade fair within your own country	31.0%	57.4%
Participated in a trade mission to another country	4.0%	16.4%
Organized internal training courses for your employees or encouraged them to follow external training courses	35.7%	31.1%
Been accepted into any sort of government sponsored business development/assistance program	11.9%	23.0%
Answered question	**126**	**61**
Skipped question	**1**	**8**

In terms of networking and information sharing, women were much more likely to meet weekly or monthly with other business owners to share ideas and experiences (78.6% vs. 46.3%). A much higher percentage of women also attended conferences or business meetings with other business owners either weekly or monthly than men (61.6% vs. 39.7%). Conversely,

men met with business advisors, senior managers, and company employees to discuss business planning and strategies more frequently than women.

These findings may suggest that women engage in more "general" networking strategies, while men focus on more "targeted" networking strategies. A possible implication of this is that there may be opportunities for women to learn to use their networking time and efforts more effectively by focusing on the specific areas that would improve the performance of their firms. Few business owners, of either gender, met with any frequency with local or regional government officials about their business challenges or needs. This suggests a largely untapped area of opportunity for women entrepreneurs in the form of learning how to influence and shape public policy.

How frequently do you …					
Females	**5. at least weekly**	**4. once or twice a month**	**3. a few times a year**	**2. never**	**1. I don't know**
Meet with other business owners to share ideas and experiences	27.0%	51.6%	19.0%	2.4%	0.0%
Talk to local or regional government officials about your business challenges or needs	0.8%	4.9%	39.8%	52.8%	1.6%
Attend business meetings or conferences with other business owners	11.2%	50.4%	36.0%	2.4%	0.0%
Travel outside your own community to either market your business or to learn new business skills	4.0%	19.2%	52.0%	22.4%	2.4%
Meet with your business advisors (such as an attorney, accountant, advisory board, or mentor) to discuss business plans and challenges	6.5%	22.6%	54.8%	16.1%	0.0%
Meet with employees or senior managers in your company to discuss issues beyond day-to-day challenges – like growth strategies or business planning	27.9%	26.2%	16.4%	22.1%	7.4%
Answered question	**126**				
Skipped question	**1**				

Males	5. at least weekly	4. once or twice a month	3. a few times a year	2. never	1. I don't know
Meet with other business owners to share ideas and experiences	18.8%	27.5%	37.7%	15.9%	0.0%
Talk to local or regional government officials about your business challenges or needs	1.4%	7.2%	36.2%	55.1%	0.0%
Attend business meetings or conferences with other business owners	8.8%	30.9%	41.2%	19.1%	0.0%
Travel outside your own community to either market your business or to learn new business skills	4.3%	26.1%	46.4%	23.2%	0.0%
Meet with your business advisors (such as an attorney, accountant, advisory board, or mentor) to discuss business plans and challenges	13.0%	17.4%	58.0%	11.6%	0.0%
Meet with employees or senior managers in your company to discuss issues beyond day-to-day challenges – like growth strategies or business planning	34.8%	26.1%	15.9%	20.3%	2.9%
Answered question	**69**				
Skipped question	**0**				

Our results provide insights into marked gender differences in terms of the issues that are most important to our sample of entrepreneurs. Not surprisingly, many of these have implications for education and training. Women felt that gaining access to training and technical assistance was more important than men (3.2 vs. 2.6). Similarly, women were more concerned about keeping up with the latest technology (4.1 vs. 3.7) and learning more about gaining access to new markets (3.8 vs. 3.3). One of the widest gaps between women and men came in the area of dealing with social and cultural issues and being taken seriously as a business owner (3.3 vs. 2.7). This response, in particular, may reflect lower levels of self-efficacy or self confidence on the part of women entrepreneurs.

Using a five-point scale, where 5 means extremely important, 3 moderately important, and 1 not important at all, how important are each of the following issues for you in your business at the present time?	**Female Average Response**	**Male Average Response**	**Female/Male Difference**
Access to capital for current business needs	3.6	3.6	0.0
Access to capital for longer-term capital investment and growth	3.4	3.5	-0.1
Finding and keeping qualified employees	4.0	3.9	0.1
Access to training and technical assistance to learn business and financial management skills	3.2	2.6	0.6
Keeping up with the latest technology (Gaining access to technology for my business)	4.1	3.7	0.4
Access to specialized suppliers for staying ahead of the competition	3.2	2.9	0.3
Reforming laws and regulations that hamper business growth	3.4	2.9	0.5
Eliminating corruption among government officials/ Need for payoffs, bribes	3.1	2.2	0.9
Diminishing high cost of public services (water, electricity, telecommunications)	2.8	2.3	0.5
Access to property, land, business premises	2.5	2.3	0.2
Learning more about gaining access to new markets for business expansion	3.8	3.3	0.5
Dealing with social and cultural issues/Being taken seriously as a business owner	3.3	2.7	0.6
Answered question	**127**	**69**	
Skipped question	**0**	**0**	

Discussion and Conclusion

This article describes the results of a survey on the innovative practices of a sample of U.S. firms. Survey responses reveal marked differences between women and men in attitudes toward innovation and the extent to which they innovate in their own firms. These differences have implications for the education and training of women entrepreneurs who are growing in terms of both numbers and economic impact.

From the standpoint of human capital, our survey results point to opportunities in the areas of both education and experience. Although survey respondents were well educated on average, men were more likely to have advanced degrees that typically provide specialized types of knowledge and skills. Further, although a high percentage of women were employed, women were much less likely to have prior experience at the executive or senior management levels, consistent with prior research. In terms of industry distribution, women business owners were more heavily clustered in the highly competitive service and retail fields, while men were more heavily represented in more growth-oriented fields including manufacturing, information/communication and professional/scientific and technical activities. Our survey results also reveal that women-owned firms were small and were less likely to have growth intentions, also consistent with prior research.

These discrepancies highlight the continued need to provide girls and young women with a full range of educational and leadership opportunities to help them become aware of their options at an early age. As an example, the NSF ADVANCE program seeks to increase the number of female faculty in the STEM disciplines, thereby indirectly benefiting college-age students. There is also a need for programs that target young women at an even earlier age; junior high or high school. By making girls aware of the types of careers that are available to them, and by providing role models and mentors, an increasing number of young women will be encouraged to develop the skills in science, math, and technology. These skills and the positive attitudes that accompany them will equip a new generation of young women for careers and entrepreneurial opportunities in innovative firms. From the perspective of leadership development, innovative firms also have a role to play in hiring women and creating an environment that is both female-friendly and family-friendly. As an added measure, firms can design programs to identify women employees with leadership potential and provide them with the experiences and training that will help them advance their careers.

Within our survey, several questions specifically targeted the attitudes of women entrepreneurs and their perceptions regarding educational needs and priorities. Our findings reveal that women are very open to a variety of types of training opportunities and see the value of continuing education. This willingness to engage in ongoing educational activities provides an opportunity to develop and deliver programs

targeting specific needs such as developing innovative ideas, securing a patent, steps in the commercialization process, raising capital, exporting, or influencing public policy, to name just a few. These programs can be short term in nature and highly focused to minimize time spent away from the firm.

Our results also reveal that women are aware of the importance of building social capital in the form of networks and key contacts. Our results demonstrate that a very high percentage of women engaged in networking activities by joining a business chamber or organization. There is some indication, however, that women would benefit from learning how to engage in more "targeted" networking strategies, those that would provide them access to specific resources or help them to improve their firms' performance. An entrepreneur's time is one of her most scarce resources, so learning to link social capital and performance would allow her to reap high returns on her networking activities.

Responses to several of our survey questions suggest that women may have less confidence in their ability to identify and develop innovative ideas. This pattern of responses may fall into the area of "self-efficacy" or the belief that one has the necessary skills to start and operate a business. Prior research attests to the importance of education and training in building self confidence in women entrepreneurs, and our survey results confirm those findings. Women were more likely to agree with the statement that they have some innovative ideas but don't know how to implement them. Women also expressed a higher level of concern with being taken seriously as a business owner. In light of these findings, we see opportunities for educational programs that link new and aspiring entrepreneurs with successful entrepreneurs who can serve as role models and mentors, a need that our women entrepreneurs also stressed. Women who have already developed innovative firms "know the ropes", and they can provide guidance and encouragement to women who are just getting started. As the Diana Project researchers have pointed out, there is an increasing supply of women who have launched successful and growth-oriented innovative firms (Brush et al., 2001). These seasoned entrepreneurs can provide both knowledge and support to those who follow.

One limitation of this study is that it focuses on the experience of a relatively small number of women and men entrepreneurs in the United States. Further research could explore the extent to which our findings can

be generalized to a larger sample of U.S. firms or firms located in other countries. Similarly, our sample of business owners is largely a convenience sample composed of entrepreneurs who chose to respond to an on-line survey. It is not a stratified, random sample. Finally, this sample of firms represents a broad range of industries. It would also be worthwhile to explore the experience of women and men entrepreneurs in industries that are typically characterized as being highly innovative. These might include technology-based industries and those in the field of bio-science. This would allow us to determine if women and men employ different innovative strategies and perceive different types of educational and training needs in a narrower range of highly innovative industries.

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A P S T R A K T

U ovom radu istražujemo rezultate ankete o inovativnoj praksi na primeru kompanija iz Sjedinjenih Američkih Država. Rezultati ankete otkrivaju polne različitosti u oblastima ljudskog i socijalnog kapitala. U oblasti ljudskog kapitala, žene nisu zainteresovane za viši stepen obrazovanja ili iskustvo top-menadžmenta. U oblasti socijalnog kapitala, iako je puno žena uključeno u aktivnosti umrežavanja, postoje dokazi da su njihove strategije umrežavanja lošije od muških. U skladu sa prethodnim istraživanjima, žene preduzetnice su na nižem nivou ,,samoefikasnosti" ili samopouzdanja u pogledu vlastitih sposobnosti identifikovanja i razvoja inovativnih ideja. U ovom radu se diskutuje o implikacijama gore izvedenih zaključaka na strategije edukacije i obuke novih generacija žena preduzetnica.

KLJUČNE REČI: *žene, polne razlike, ljudski kapital, edukacija*

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