International Journal of Knowledge Management and Practices
8 (1) 2020, 33-40
http://publishingindia.com/ijkmp/

AN INSIGHT INTO THE FACTORS AFFECTING WOMEN TECHNOPRENEURS

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Abstract *Purpose: Participation of women in different types of entrepreneurship is on an all-time high with females actively embarking on these fields to pursue a career. Technology-based businesses have always been the domain of men essentially because of the field's male-dominated character. Despite of this fact, many women have ventured into this industry against all odds and made inroads in this field. However, the population of women entrepreneurs in technology sector is still marginal primarily because the climate for female technopreneurship in the country is not yet positive. The purpose of this paper is to investigate and examine into the various motivating and inhibiting factors that affect existing or potential women entrepreneurs in the technology field. The study will provide deeper insights to women considering starting a technopreneurial venture and has policy implications. Methodology: For the purpose of this study, insights were derived through an extensive review of theoretical and empirical papers on women entrepreneurship and women technopreneurship.*
Objectives:

- *To provide an account of women technopreneurship*
- *To identify and explain the various motivating and inhibiting factors that affect women technopreneurs*

Keywords: *Women Entrepreneurship, Technopreneurship, Inhibiting Factors, Motivating Factors*

Introduction

In the recent years, we have been witnessing a spur in the entrepreneurial activities within the economy. In a highly populated country such as India, where population has exceeded the 1.2 billion mark, the entrepreneurial initiatives undertaken in various sectors of the economy are crucial to embark upon the path of economic and social development and growth. There is a great significance and dire need of as many innovators and job creators as possible to deal with the problems of unemployment and increase in income generation. Entrepreneurship plays an important role in the development of the national economy and an increase in employment rates (Vita, 2014; Welsh, 2016). The state of Jammu and Kashmir has gone through major setbacks because of the decades-long political instability, making it an ailing economy and increasing unemployment to alarming levels. Nevertheless, if entrepreneurial activities are pursued with zeal and zest, it has the potential of boosting the state economy drastically. A fact that is both positive and interesting is that enormous entrepreneurial potential and talent exists to fuel entrepreneurial development and success in the state. Interest in entrepreneurship as a socioeconomic phenomenon has generated a voluminous and interdisciplinary body of research (Ireland, 2007). Research in the field of entrepreneurship has highlighted various issues, opportunities, problems, environmental factors, success factors, competencies, and capabilities related to the entrepreneurial domain. An interesting fact that research bears testimony to is the gendered character of entrepreneurship. It has been shown that there are gender differences around entrepreneurship (Yetim, 2008; Barret & Morres, 2009; Claire, 2009; Burke, 2010). Based on the factors, competencies, and characteristics that have been historically associated to successful entrepreneurs, the field has been generally portrayed to be desirable for men. A "masculine mystique" has always been endorsed, making women perceive the field as non-viable/difficult as a career choice. Despite of the fact, the number of women pursuing entrepreneurship as a career has swelled within the state, country as well as across the globe. An estimated 120 million women have ventured into entrepreneurship at a global level and approximately 8 million women are operating or have started their own enterprises in India alone. Women

entrepreneurship in India is on a rise but the percentage of women involved in entrepreneurship is significantly low as compared to other countries. This is because the general conditions that are conducive to the entrepreneurial growth of women are yet to be worked upon and improved. As per the MasterCard Index of Women Empowerment, "Women entrepreneurs have been carving out a niche for them across the globe. However, there is significant potential to harness the untapped potential of Women's entrepreneurship in India". There is no doubt about the fact that governments are intervening and facilitating women entrepreneurs and endeavoring to establish a positive environment, yet there are a myriad of factors/issues that surround women entrepreneurship. The intensity of these issues and factors increases manifold when women venture into technology-based businesses, more specifically, techno entrepreneurship. In common parlance, the terms "women" and "technology" have been rarely associated and spoken of together. Women entrepreneurial activities have been confined to service sectors, particularly, retailing and wholesaling. The techno entrepreneurial space remains largely male dominated. But, times are changing and women are increasingly exhibiting interest and taking initiatives to come up with bold ideas and dive into technology-based ventures. Women making it to the techno entrepreneurial field have been dealt with skepticism and doubt. Research indicates that the participation of women in Science, Technology, Engineering and Mathematics is on the decline despite public support (Fouad, 2010; Mayer, 2006; McCrea, 2010). Abundant research has been done and voluminous literature has been generated that provides an insight into the various factors that motivate and hinder women to take up entrepreneurial activities in general. There are gaps in literature that exist. Research studies have primarily focused on general women entrepreneurship. Very little work has been done in the field of women technopreneurship; specifically at the state, national and international levels.

The present study will be organized as follows: first, the concept of technological entrepreneurship will be introduced. Thereafter, women technopreneurship will be introduced. A thorough literature review will be presented following which the objectives of the study will be addressed, i.e., factors affecting women technopreneurs will be discussed in detail.

Literature Review

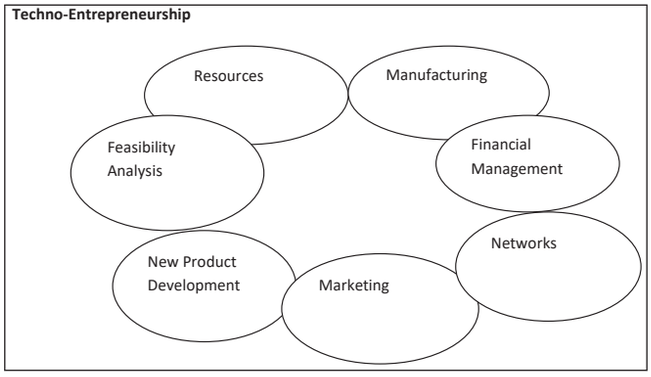
The Entrepreneurship space

The term "Entrepreneurship" has been conceptualized differently based on various approaches; therefore, no single and clear-cut definition of the term exists. Entrepreneurship is a multidimensional concept and there is no generally accepted definition of entrepreneurship). Early researchers (Lumpkin & Dess, 1996) usually defined entrepreneurship from one dimension, i.e., Schumpeterian innovation of the German tradition, risk-taking associated with uncertainty of the Chicago tradition, or opportunity seeking, speculation and risk bearing of the Australia tradition (Herbert, 1989; Hindle, 2002). There is a lack of common understanding of what entrepreneurship precisely is (Davidson, 2004; Hill & Levenhagen, 1995). Many notable and influential scholars in the field of entrepreneurship have attempted to provide a concise and concrete definition of entrepreneurship that captures the essence of the term in its entirety and diversity. According to Shane & Venkataraman (2000), the field of entrepreneurship is defined as the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited. Entrepreneuring is defined as the efforts to bring about new economic, social, institutional, and cultural environments through the actions of an individual or group of individuals (Rindova, Barry & Ketchens, 2009). Entrepreneurs are understood as individuals who "innovate new products/services, create new processes, open new markets, organize new industries" (Brush, 2008). Entrepreneurship is a broad socio-economic phenomenon, an endeavor "undertaken by an enterprising individual, firm, or small business" (Brush, 2008). The abovementioned definitions help us in understanding that entrepreneurship is about opportunity recognition, innovations, risk-taking behaviors, and endeavors with a clear aim of achieving the outcome of social and economic development.

The Techno-Entrepreneurship Space

The unprecedented and rapid advancements in technology have had a defining and significant impact on social and cultural progress and economic development since last few decades; particularly, in the developing countries. The field of entrepreneurship has been organized around a central research question: how opportunities for the creation of goods and services are formed and exploited (Shane & Venkataraman, 2000). A logical and obvious answer to this frequently asked question is that these are the technological breakthroughs and changes that have the potential to generate entrepreneurial opportunities. Technologies, whether new or already existing, can be key sources in this context. However, mere existence of technologies does not create value. Value creation is ensured and made possible only when technologies are utilized to develop new products and services, which are then commercialized. Technologies are only more likely to contribute to value creation when they are successfully commercialized (Zahra & Neilsen, 2002; Gans & Sterns, 2003). This is what technological entrepreneurship is all about. The most cited authors (Dorf & Beyers, 2005) define technological entrepreneurship as a style of business leadership that involves identification and

human resource high-potential capitalization, technology intensive commercial opportunities, managing accelerated growth, and significant risk taking (Dorf & Beyers, 2005). In their definition, Shane and Venkataraman see technological entrepreneurship as the processes of assembling resources, technical systems, and strategies by an entrepreneurial venture to pursue opportunities (2000). If new technologies and innovations are at the core of a business, we are referring to a technology-based business. Technological entrepreneurships brings innovative and novel products and services into the marketplaces, thereby, making more significant contributions and development in comparison to traditional entrepreneurship. More specifically, technological entrepreneurship (or its synonyms, i.e. entrepreneurship, techno-entrepreneurship, and techno entrepreneurship) consists of a set of behaviors and actions that drive the market process (and also a strategy), which is based on identifying high potential, technology-intensive commercial opportunities, gathering/assembling resource, and managing rapid growth and significant risk with the final aim to exploit those opportunities for value creation (Antonic & Prodan, 2008) · The abovementioned definitions and arguments make it clear that a technology entrepreneur is different from a general entrepreneur. Technology entrepreneur is the one, who organizes, manages, and assumes the risk of a technology-based business enterprises (Nicholas & Armstrong, 2003).



Source: Hemantkumar P. Bullsara, Shailash Gandhi, P.D.Porey

Fig. 1: Relationship between Techno-Innovation & Techno-Entrepreneurship

Countries across the globe are facilitating technology-based ventures and various policy instruments are being developed to support the same, especially in the developing countries. Owing to the attractiveness of techno entrepreneurship, men and women across the globe, especially from Science and Technology backgrounds, are exhibiting great interest in setting up/operating technology-based ventures.

The Women Entrepreneurship Space

The growing participation of women in entrepreneurship is a trend that is being witnessed across the globe, nation, and within the state as well. The entrepreneurial potential of women has been acknowledged as governments seek to accelerate economic grow and attract more women towards new venturing (Singh & Belwal, 2008; Butler, 2003). Women are attracted to entrepreneurship for its intrinsic rewards of independent work, the opportunity to work in fields of interest, and the chance to create and work within environments that mesh with their values (Buttner, 2003). Owing to the importance of women in entrepreneurship, extensive research has been conducted in the areas of women entrepreneurial motivations, factors determining success of women entrepreneurs, problems of financing, work-life balances of women pursuing entrepreneurship as a career, and women entrepreneurs coping with stress. Special emphasis in research has been laid down on the gendered character of entrepreneurship. Abundant literature is available on the gendered character of entrepreneurship, and the consensus among these diverse studies is that entrepreneurship is still construed as a largely masculine endeavor, one situated in a cultural space dominated by masculine norms and values (Bruni, Gherardi & Poggio, 2005; Lewis, 2006; Menzies, Diochon, Gasse & Elgie, 2006). Popular depictions involve predominantly masculine characterizations of entrepreneurs as "pioneers," "conquerors," and "businessmen" (Ahl, 2006; Bird & Brush, 2002). There are a number of factors responsible for this gendered character of entrepreneurship, making the field being perceived as favorable for men and hostile for women. Gendered entrepreneurship rates are affected by not only values, beliefs, and expectations, i.e., the so-called soft issues, but also by institutionalized norms and practices, i.e., the so-called hard issues (Elam & Siri, 2010). Women entrepreneurs encounter numerous challenges when embarking upon an entrepreneurial path. Women are perceived and thought to be riskier when finance has to be acquired. Conforming to social norms and adhering to prescribed behaviors appropriate to their gender is yet another challenge. Women experience prejudice based on frequent sex stereotyping. The idea of women being successful entrepreneurs is often judged and looked at with skepticism and doubt.

The Women Technopreneurship Space

The technology field is highly attractive, dynamic, and lucrative; however, research indicates that the participation of women in science, technology, engineering, and mathematics is on the decline despite public support (Fouad, 2010; Mayer,

2006). Female entrepreneurs are heavily underrepresented in certain sectors of the economy, such as science, engineering, and technology (SET), despite increasing numbers of women studying these subjects at university (Mayer, 2006). This is because the field is competitive and political, and primarily because technology is highly male dominated. From the beginning, society discourages women to pursue science and technology pursuits. Cultural norms and values in science and technology remain hostile to women, and that is true of both the technology industry and science academia (Bilimoria, 2008). Many studies suggest that women in the field of technology being a minority demographically experience isolation and this mystifies their understanding of factors that can help them succeed and advance in this field. Additionally, many jobs in science and technology can be characterized as "extreme" in that they require physical strain and risk, long hours, and travel that women, still primarily responsible for the family and household, cannot always sustain (Hewlett, Luce & Servon, 2008). Indeed, a male-dominated industry is such "not only in the historical and contemporary, demographic composition of its employees, but in its assumptions, values and everyday practices" (Miller, 2004). Challenges also exist on the work-life front. A Canadian Women in Technology survey found that work-life balance was mentioned as a primary challenge for technology entrepreneur (Orser, Riding, Dathan & Stanley, 2007). An extensive review of literature makes it clear that the challenges encountered by women increase manifold when they venture into technoentrepreneurshp. Despite these inhibiting factors and challenges, there is a percentage of women who are breaking shackles and taking bold initiatives to venture into technology-based businesses.

Women Entrepreneurship in Kashmir

The state of Jammu and Kashmir, despite being rich in resources, is confronting problems of high level of unemployment leading to socio-economic problems and crisis. An obvious and logical solution to the economic problems being encountered is to promote entrepreneurship in the state. Both men and women in the state of Jammu and Kashmir can contribute by taking up entrepreneurship as a serious career choice. The statistics on unemployment in Jammu and Kashmir reveal that the unemployment rates of women in the state are significantly higher as compared to men. The contribution of women in the economy is significant and important. Women are enthusiastic and industrious as workers and have great entrepreneurial potential. Both men and women have equal prospects and opportunities from a theoretical entrepreneurial viewpoint; yet, the ground reality is entirely different. The entrepreneurial potential of women is often overlooked yet women from various fields and backgrounds have proved their mettle by operating different businesses efficiently and profitably in the valley. Owing to the significance of women entrepreneurs, different researchers have studied the various aspects of women entrepreneurship in the state of Jammu and Kashmir. Past studies have also identified the various factors that motivate women to be entrepreneurs (Parihar, D. Singh, Sharma & R. Singh, 2008). These studies reveal that family support, government-backed financial incentives and assistance, innate drive, passion, etc., motivate women in the state to pursue entrepreneurship. Financial independence, family support, profits, and a sense of achievement highly satisfy women entrepreneurs. Much of the researched work is focused around general women entrepreneurship. Very little work has been done in the field of women technopreneurship, specifically. Accessing data about women entrepreneurship in the state is difficult. Also, data specific to gender is rare and not available separately from any source, which makes the gender-specific analysis challenging.

Factors Affecting Women Technopreneurs

Abundant literature is available on entrepreneurship in general. Numerous studies have been conducted with an aim to explore and investigate the various factors that affect entrepreneurial motivations and intentions. However, research initiatives to examine these factors specific to gender have been sparse. It was in 1980s that researchers started conducting gender-specific studies that shed light on the various challenges and difficulties faced by women entrepreneurs. Still, very few researches specifically addressing women technopreneurship are available. Through a thorough review, a number of motivating and inhibiting factors have been found to exercise their influence on existing and potential women technopreneurs and have been depicted in the model in Fig. 2. Motivators are those factors that impel women to pursue entrepreneurship. These factors can be intrinsic (internally driven) or extrinsic (driven externally). The intrinsic motivating factors are referred to as "Pull Factors" whereas the extrinsic factors that incite women to start a technopreneurial venture are referred to as "Push Factors." The type and the level of entrepreneurship that is pursued is largely governed by the cultural, social, and economic structures of the region where an individual (woman) is situated. These socio-economic and cultural factors may push or pull women into technological entrepreneurship. Studies are suggestive of the fact that women are pushed into entrepreneurship because of a lack of contentment and satisfaction in their previously held jobs characterized by boredom, lack of interest, and job frustration. For many women, unemployment is a push factor while for some self-employment may be the consequence of "blocked upward mobility." Glass ceilings-the seemingly impenetrable barrier that prevents female mid managers from moving up to the executive suite has become the focus of attention for researchers (Clarke &

Drinkwater, 2010; Greene, Gatewood & Carter, 2010). These glass ceilings are a primary and significant factor that pushes women in entrepreneurship. According to Kephart & Schumacher (2005), women choose entrepreneurship as a conduit of circumventing the glass ceilings. Hostility in the work environment is another factor that pushes women into entrepreneurship. A study of (Bellu, 1993) is suggestive of the fact that women may be more willing to accept entrepreneurial risks because they face more hostile and prejudicial work environment.

Many a times, women pursue entrepreneurial careers because they are driven to it. Need for achievement is a significant pull factor associated with women entrepreneurial motivation as per the McClelland's theory. Women are driven to entrepreneurship because they seek economic independence and self-dependence, flexibility, and autonomy. Freedom and more control over their work and concept of no boss attracts women to entrepreneurship.

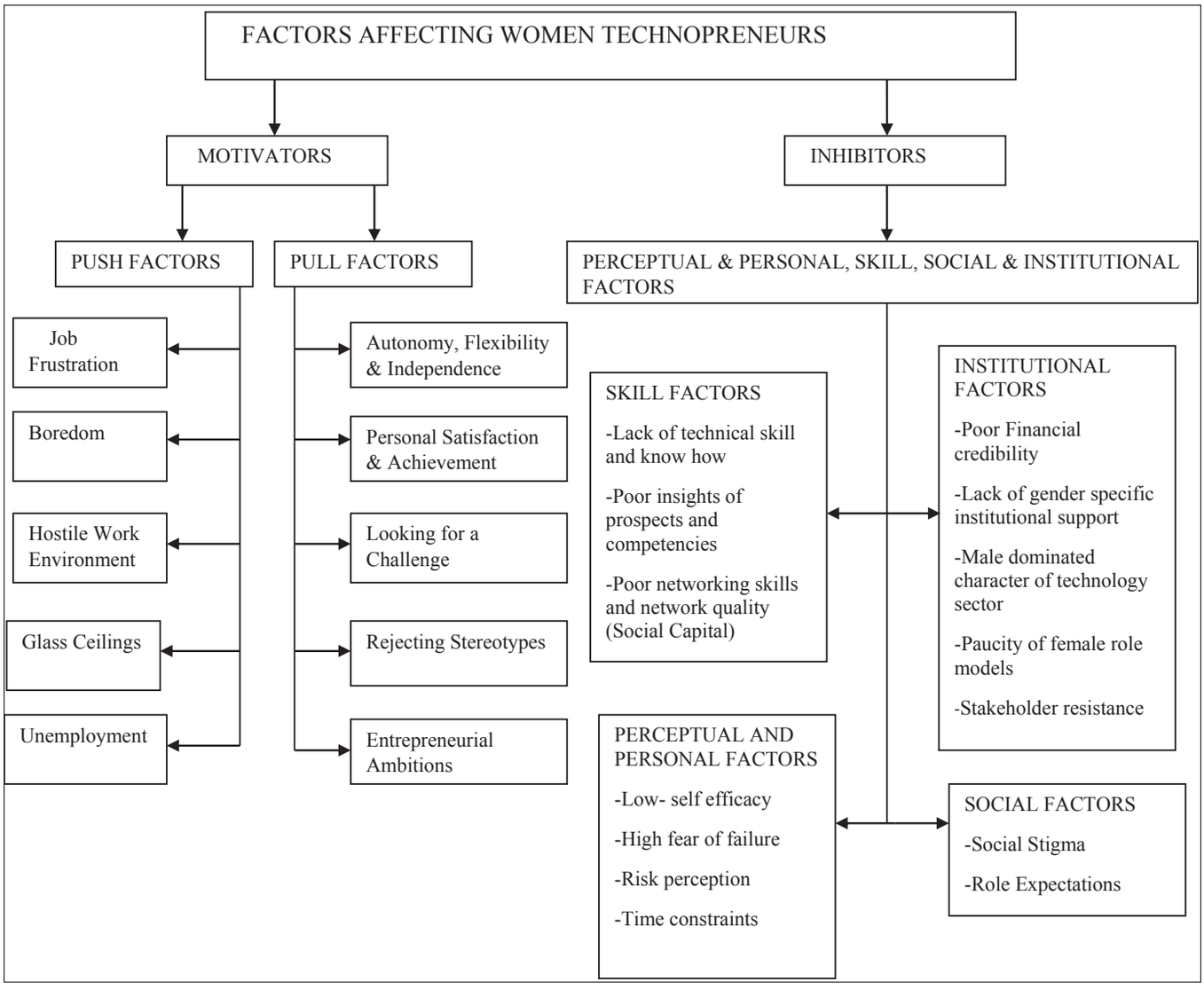


Fig. 2: Author's Compilation of Factors Affecting Women Technopreneurs

Studies also reveal that women are driven towards technological entrepreneurship with an aim to challenge themselves professionally and personally and, thereby, seek pleasure and satisfaction in their work. Women in techno-based sectors face multiple challenges because of the implicit association of gender with technology, more specifically, masculinity. Women are stereotyped on the basis of their gender and it is significantly reflected in the technology industry. Women pursue entrepreneurship to reject these stereotypes. Entrepreneurial ambitions of achieving big and creating a difference also are significant factors that motivate women to start up entrepreneurial ventures.

The field of technology is significantly characterized by lower levels of participation by women. This calls for a detailed

analysis of the various factors that inhibit women to enter or develop in the technopreneurial field. Inhibiting factors may be defined as those factors that demotivate women to dive into technology-based businesses or restrain or hinder the development of existing female technopreneurs. Gendered entrepreneurship rates are affected not only by values, beliefs, and expectations, the so-called soft-issues, but also by institutionalized norms and practices, the so-called hard-issues (Elam & Siri, 2010). For the purpose of this study, the various factors have been discussed under four heads, viz., the perceptual and personal factors, skill, social, and institutional factors. The Perceptual and Personal factors include risk perception, low self-efficacy, high fear of failure, and time constraints. As per the *Global Entrepreneurship Monitor* study, conducted for West Midlands, women have a higher fear of failure than men (39.2% compared to 32.6% of men). Starting a technopreneurial venture and operating it involve a considerable risk, particularly because of the fear of failure in the light of high failure rate. Women also have a low self-efficacy. The Global Entrepreneurship Monitor study concludes that women doubt their abilities to start a business (38.9% compared to 58.6% of men). Women entrepreneurs confront time constraints because of the pressure to balance work and family life. Women aren't able to concentrate due to pregnancy, nursing children and are mostly involved in catering to family demands. Women with high commitment to family will be less likely to interact in market/financial/industry networks, possibly affecting the growth prospects or even novelty of the venture. Skill factors that inhibit women technological entrepreneurs include lack of technical skill and know how, poor insights of prospects and competencies, poor networking skills, and network quality (Social Capital) (Brush, 2008). Previous studies shed light on the fact that women have limited technological exposure and a kind of phobia about technology, which results in a lack of technological skill and know how. This skill deficiency combined with lower self-efficacy is a major inhibiting factor for women technopreneurship. Yet, another barrier is that in most economies, women on an average have been found to have poor entrepreneurial intentions owing to lesser understanding and insights about entrepreneurial competencies and prospects. The General Entrepreneurship Monitor study conducted in West Midlands concluded that women are less likely to see good business opportunities (32.1% compared to 41.2% of men). Networking is as important to female entrepreneurs as to male entrepreneurs. According to Yetim (2008), initiating and maintaining (a business) requires extra effort for women trying to succeed in male-dominated work environments. Consequently, women need to acquire more assets through their social connections and networks. But, it has been witnessed that women have poor networks and the quality of their networks is also deficient. As per the findings of Global Entrepreneurship Monitor, women are less likely to know an entrepreneur (22.5% compared to 41.2% of men). As per the studies by Linehan and Sculliion (2008) and Farr-Wharton and Brunetto (2007), networking is crucial to overcome "resource poverty" in technology-based entrepreneurial firms. Lack of social capital and networks was the primary reason that explains why women in high-growth industries have less access to venture capital funding. Institutional factors are another inhibiting factors, which include constraints such as poor financial credibility, lack of gender specific institutional support, male-dominated character of technology sector, paucity of female role models, and resistance from stakeholders. One of the major problems encountered by women is to obtain start-up funds to start technology ventures. Women encounter difficulties in obtaining funds (loans) because women are perceived to be less successful as business owners than men, by the lending institutions. The primary reasons highlighted were lack of social capital and weak networks. Also, financial institutions are doubtful about the entrepreneurial abilities of women and women are considered risky. There is a lack of gender-specific institutional support from organizations that have been set for entrepreneurial support and development. The approach of the institutions providing entrepreneurial support and services has to be adjusted and modified with a view to assist women technopreneurs effectively. It is a well-known fact that the technology sector is highly male dominated. The techno-entrepreneurial space lags significantly behind in terms of gender diversity. Primarily, cultural norms and values in science and technology remain hostile to women, and that is true of both the technology industry and science academia (Hewlett, Luce & Servon, 2008). This male-dominated character of the industry has rendered it seemingly nonviable for women. A logical consequence of industry's male-dominated character is the paucity of female role models. Studies pertaining to women entrepreneurship also reveal that women encounter resistance from stakeholders both within and outside the organization. Women in technology-based businesses not only face resistance from financers, but have to encounter resistance from clients, subordinates, as well as peers. Another inhibition for women technopreneurs are the social factors, which involve social stigma and role expectations. Societal pressures are a large and significant barrier. Women are expected to shoulder female responsibilities and perform expected roles of a wife, mother, and a homemaker and conform to the ideal identity of their gender. Society demands women to devote themselves to either work or family.

General research studies have been conclusive of the fact that men are motivated to initiate ventures primarily because of pull factors (intrinsic motivators) (Shane, Kolvereid & Westhead, 1991). Push factors exercise a very less influence on men. Hisrich and Brush (1985) tried to ascertain the reasons, which motivate women to start their own ventures. They concluded that women are motivated primarily by push factors (extrinsic motivators) to venture into business.

Conclusion

The purpose of this paper was to provide a theoretical review of women entrepreneurship in general and women technopreneurship in particular and identifying the various factors that affect women technopreneurs by acting as either motivators or inhibitors. An account of the significance and importance of entrepreneurship for the economy, particularly, developing economies such as India was provided. Major emphasis was put on the gendered character of entrepreneurship explaining how masculinity has been associated with entrepreneurship in general. It was found that women having entrepreneurial intentions or those who are operating/running a business are often looked at with skepticism and doubted and have to encounter a great deal of challenges and difficulties. The magnitude of these issues increase manifold when women think of venturing into the technology field, which is heavily dominated by males. Extensive review of literature was instrumental in identifying the various inhibiting and motivating factors, summarizing, and classifying them. It was found that motivators that incite women to venture in the technology field could be either extrinsic or intrinsic in nature. Push factors represent extrinsic motivators such as boredom, job frustration, and unemployment that impel women to start a technopreneurial venture. Pull factors represent intrinsic motivators such as need for achievement, entrepreneurial ambitions, autonomy, independence, and personal satisfaction that interest and incite women to venture into the technology-based businesses. Also, the various inhibiting factors were drawn from literature and classified into Perceptual and Personal factors, Skill factors, Institutional, and Social factors. A detailed explanation of the various factors was presented. The study was also conclusive of the fact that women primarily are motivated because of push factors rather than pull factors.

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