

ATHENS EDI 2013 CONFERENCE

Stream 9: Gender, power and organizations

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The puzzled link between gender and innovation

Introduction

Innovation appears as a key factor of success for companies to increase their competitiveness and growth and to create new employment opportunities. Indeed, innovation increases competitiveness and helps enterprises, in very early stages of their business cycle (creation, seed, start-up) to mature (development, growth) and generate more cash-flows.

While studies on innovation traditionally adopt a dichotomous approach, opposing product/process and incremental/radical innovations (Freeman, 2000), they mainly focus on

the radical & product aspect (Blake and Hanson, 2005)¹. Unfortunately, both radical and product innovations are mainly male-led, in masculine-controlled industries. As a result women appear as less innovative.

Recently, more and more women have become significantly involved in workforce and in almost all economic sectors. This suddenly changed the innovation landscape and created new ways of innovation. Several papers, such as Blake and Hanson (2005) have started to assess feminine innovation, by showing their specific features, different from those commonly discussed in innovation literature.²

However, feminine innovations still appear as marginal and are not yet fully explored.³

According to some feminist theories (Nodding, 1984) the predominant “patriarchal” model leads to gender relations where there is a clear domination of one by the other: women are dominated by men. We believe that innovation, such as organization and power, are mainly scrutinized-from a (biased) masculine viewpoint.

Some researchers have investigated the link between power and innovation, but the concept of power is not really discussed in the innovation theories according to Ibarra (1995). Ibarra’s explanation (1995) is that there is a confusing approach of power⁴ as a capacity, while power is often experienced as a domination. Most of these researches have been devoted to the identification of individuals and organizational determinants of power acquisitions and innovative outcomes (Ibarra, 1995). *In fact, an organization’s informal structure may be critical when the exercise of power requires extensive boundary spanning and that the sources of power have both general and innovation-specific effects* (Ibarra, 1993, p 471)

This leads us to raise the following question:

What is the connection between innovation and power?

On the one hand, innovators have leading/dominating positions as they implement new products and process in very competitive markets that are based on radical and incremental innovations. These innovations are implemented in the industries, sectors where men predominate, which bring a sort of power to male innovators (see section1).

¹ See section 2

² Blake and Hanson (2005) give evidence on gender differences for creating opportunities of innovations.

³ In the “Innovation Union” report where no specific strategy is developed towards women, it is nevertheless emphasized that the “commission will look for an additional performance indicator reflecting gender for inclusion in the scoreboard” (p.38), Europe 2020, Flagship initiative, Innovation Union, SEC(2010) 1161

⁴ “Several authors have defined power as the ability to overcome resistance to achieve a desired result” (Ibarra, 1995).

On the other hand, in the last years, there is an extensive literature shedding lights on factors that analyze why there is a lack of women in leading positions. The main explanation is the persistence of stereotypes towards women and female roles. This is also reflected when it comes to innovation. In addition, there are new kinds/areas/ determinants of innovations that are not yet or partially explored by the recent academic literature. This explains to a large extent the substantial existence of male norms.

This paper refers to studies on innovation specifically, we explore the determinants of innovation and individual features of the innovator profile. It provides strong evidence that economic and financial literature on innovation brings several interesting conclusions. However, many issues and questions are raised when it comes to the gender perspective. The paper is organized as follows. Section 1 sets forth the theoretical approaches first on why the proportion of women on boards and leadership position is so low and second why they are marginalized when it comes to innovation.

Section 2 shows that traditional empirical studies focus only on a set of innovation that encompasses radical and technological innovations (male innovations). This literature excludes new forms and more feminine innovation recently highlighted in emerging literature. The main measures of individual innovative behavior in the literature are analyzed in section 3. Section 4 concludes the paper and emphasizes the need to build an “expanded and revisited” theory and measures of gender differentiated innovation and innovative behavior.

1. Gender issues and knowledge: Gendered Innovations approaches

Studies on women and organizations, specifically those analyzing women’s influence in science’s field can contribute to enhance our understanding of feminine innovations as well as their specificities. In fact, many studies on gender were conducted in engineering, healthcare, technology and sciences that are commonly recognized as areas of innovation, without analyzing the link between innovation and gender however.

We would believe that the links between innovation and gender, between organizations power and gender are based on the same theoretical hypothesis.

Schiebinger et al. (2010) have distinguished four approaches in a meta-analysis conducted on gendered and science research:

First, the *gender neutral* called also liberal feminism has been used since 1970s, when women have got access to graduate education and have been able to be professors in science, medicine and engineering. This approach is linked to the *gendered - centered –approach*

(Horner, 1972 ; Terborg, 1977; Riger and Galligan ; 1980) that is commonly used in management's sciences to explain the difference in women's and men's careers.

The main assumption is that women are seen as the in-principle equals of men, and therefore they have to compete with men to get skills and experiences in a man's world. One way is to adopt masculine values and behave according to a male norms to get access to leadership and powerful positions (Shiebinger, 2001).

Male values were commonly recognized as key factors for success. Consequently, successful women had to adopt male values.

This approach considers science and technology unbiased and tends to locate problems in women (their education, socialization, aspirations, and values). To achieve success, women or girls are often required to assume and to adopt male values and behaviors. This perspective considers, according to Schiebinger et al. (2010), science and technology as gender-neutral so we can expect that the innovation knowledge, had also ignored gender differences.

Second, between the late 1980s and 1990s, a new approach had been raised inspired by the “*complementary approach* (Helgesen, 1990; Adler and Izraeli, 1988) that is the *difference approach*.

It argues that women have different and specific skills and abilities. For instance, Gilligan (1982) argued that women have a “different voice “, when making moral judgments and that they value context and community over abstract principles (Goldberger et al., 1996 and Rose, 1983).

It is also based to some extent on “a care philosophy” that sheds light on gender differences not well captured and assessed in science and technology. These authors pay particular attention to what is left out from the feminine side of life (Tronto, 1993). They focused on neglected/marginalized areas from a feminine perspective. The major concern of this approach is to pay considerable attention to the gender characteristics and to attribute positive traits, such as nurturing, to women (Schiebinger et al., 2010). The impact of women and men as key actors of change are puzzling society. However, this perspective suggests that the limited proportion of women in organizations is not only due to their gender and the organization's structure, but that both interact with the culture and influence women's behavior at workplace.

Accordingly, the difference approach is exclusive in the sense women are presented as the only key factor of change. However, an indirect cost of this is that men's role was passed over and completely neglected, that is why this approach was criticized (Schiebinger et al., 2010).

Third, the Co-Constructionism has been adopting since the 1990s in organization's science as the Gender-Organization-System's approach (GOS). It provides rich analyses of how ideas, objects, and identities emerge from cultural contexts. This approach has been particularly adopted in technology studies (Fagenson, 1993). It assumes that science, technology, and gender are constructed through social processes rather than as natural or given *a priori*. Fagenson's GOS perspective recognized the instantaneous interaction between the individual, organization and

The major contribution of Co-constructionism is to avoid both technological determinism (seeing technology as the prime driver of modernity) and gender essentialism (seeing gender characteristics as innate and unchangeable)⁵. Indeed, for this approach, gender identities and discourses are produced simultaneously with science and technologies. Technologies play an important role in constructing the identities of users and vice versa (Oudshoorn et al., 2004).

Finally, *Gendered Innovations approach* provides quite developed framework that offers methods of gender analysis for basic and applied research (*Enhancing Excellence through Gender Analysis*, Schiebinger et al. 2010). For example, gender analysis becomes a *resource* to stimulate creativity in science and technology, which enhances therefore the men and women lives and leads to scientific excellence.

It rejects surprisingly the idea that increasing women's participation will automatically lead to gender-sensitive science and technology. However, it examines intersections of gender, race, nationality, and ethnicity⁶.

Gender mainstreaming entails the systematic integration of gender equality into all systems and structures, policies, programs, processes and projects, into ways of seeing and doing (Schiebinger et al., 2010).

Gender mainstreaming needs to be expanded to include gender analysis in basic and applied research in science, medicine, engineering and technology. In fact, mainstreaming gender analysis into research is creating what it comes to be "Gendered Innovations" (ibid).

According to those authors, gendered innovations use gender as a resource to create new knowledge. It is crucially important to identify gender bias and understand how it operates in

⁵ See among others Faulkner (2001) and Wajcman (2000)

⁶ See McCall (2005, p 1771) "One could even say that intersectionality is the most important theoretical contribution that women's studies, in conjunction with related fields, has made so far". McCall L. (2005), The complexity of intersectionality, *Journal of Women in Culture and Society*, Vol. 30, No. 3 (Spring 2005), pp. 1771-1800.

science and technology. However, analysis needs to be more developed in order to see what is behind the blind gender vision: focusing on the analysis of the bias itself is not a productive strategy. Gender experts in science and technology are adopting a more positive research program that use employs gender analysis as a *resource* to stimulate gender-responsible science, medicine, and technology. It is not enough to simply “add” a gender component in a given project’s development, research must consider gender from the beginning (Who, 2010). Researchers and scientists agree that research on gender issue needs to be rebuilt and rethought.

In fact, several researchers have explained how “background cultural and social assumptions” shape science as they do with organizations, and how gender identities and technologies are “co-produced,” or mutually shape one another (Rose, 1994, Haraway, 1991; Longino, 1990; McIntosh, 1983). As scientists and policymakers are not all yet aware of the effects of this gender approach, innovation fields are challenging also a normative thinking.

As we have seen with approaches analyzing women’s scarcity in organization and science’s area, innovation milieus present the same weakness and specificity: a large male vision.

2. Innovation and gender: still a glass ceiling metaphor?

Around 7% of the highest positions of power in the 500 biggest companies in France are held by women. They are minorities of the political elite and the economic leaders. Therefore, women still face both horizontal (limited sectors) and vertical segregation (glass ceiling). Furthermore, the traditional gender stereotypes are interwoven with conventional female and male roles, which limits women’s opportunities and creates normative thinking on how women should act and behave and which positions they are expected to hold in professional life. This is also reflected in innovation environments. Policy and research both tend to disregard innovations that are pursued by certain actors in certain areas. In particular, women have been neglected in past research. According to the state of the art, this marginalization of women in innovation is related to how innovation has been conceptualized. Innovation is indeed conceived: i) from a masculine point of view. Hence the possible specificities of women are put aside. In For doing so, feminine potential to innovation and women’s innovation are still ignored; ii) from an obsolete view in which only technological and radical innovations are discussed, particularly when the link with entrepreneurship is taken into account for example, social innovation and managerial innovation bring crucial

changes in business and social spheres (yet recent studies argue that women can become a major actor in innovation specifically social innovation); iii) in traditional industries mostly conducted by men, whereas other markets that employ mostly women (for example medical, health care and welfare, and services sectors) have been neglected, despite the fact that they carry new kinds of innovations (Johansson and Lindberg, 2010).

Studies on innovation's definitions, forms and types adopt dichotomous approaches; they are usually defined in terms of: product/process, radical/incremental, competitive/social, local/universal and creative/imitative innovations (Johansson and Lindberg, 2011, Blake and Hanson, 2005, 2002; Feldman, 2000; Scott and Bruce, 1994; Drucker, 1985). This ends up with an exclusive approach. In fact, only product, radical, competitive, global and creative innovations were deeply discussed and analyzed (Blake and Hanson, 2005, Johansson et al. 2011), particularly in the late eighties and early nineties studies. They are all male-implemented innovations mainly in industrial and ICT sectors ie male-controlled sectors. In addition, these studies commonly rely on one-dimensional measures, i.e. R&D expenses and the number of patent applications to capture the level and intensity of innovation (see among others Marvel and Lee, 2011; Ruef, 2002 and Morgan et al., 2001). This disregards new forms of innovation specifically recent ones that do not suit traditional dichotomous definitions.

Unlike masculine-innovation studies, more recent social and geographical-economic studies show that innovation cannot be always global with international impacts. For example, feminine innovations are very often local and can be affected by several contextual factors. These innovations can locally enhance economic growth and create employment. They highlight that women started to enter male-dominated sectors. Nowadays, some sectors are women-dominated (for example: medical, healthcare and service sectors). Simultaneously, new forms of innovations are revealed in these sectors that are implemented by women, like some social, organizational and environmental innovations. Accordingly, women may have an effective impact on the local economy. Feminine innovations are based on a *mixture* of creativity and imitation: women adapt universal innovations to their local context which creates new opportunities that have impact on their local economic growth. This innovation process comes to be creative imitation innovation (Johansson and Lindberg, 2011). Unlike masculine-innovations, feminine ones cannot be adapted to every local environment as they are closely related and affected by contextual factors.

Regarding to these studies, women-led innovations are marginalized as they do not belong to the traditional areas/forms of innovations. This explains, to a significant extent, why women are considered as non-effective actors of innovation.

3. Innovative behavior: a male-dominated measurement

The survey of the studies on innovator profiles brings interesting findings on “actors”, “mechanisms” and “systems” of innovation. However, it does not tell us too much about the individual characteristics and gender differences of innovators. Also, we ignore how these differences could affect interaction between innovation’s actors and the innovative behavior.

For example, the literature on entrepreneurship provides quite interesting results on the links between innovation, risk taking and creativity (Kanter, 2000; Mumford and Gustafson, 1988; Van de Ven, 1993). It argues that entrepreneurs must be creative individuals and have to take risks to set up their businesses. Thus entrepreneur has an innovation potential as creativity and risk are key ingredients to set up a business. However when it comes to practice, few women are entrepreneurs because of the considerable number of barriers they face during their work life (Orhan et Scott, 2001). That is why they are supposed to be less-innovative agent as they lack entrepreneurial capacities and experience

At the same time, pursuing profitable opportunities to catalyze economic change intensifies competition and the need for challenging and creative thinking to better do things and in a more efficient way using the existent resources of the firm. The literature has started exploring the role played by intrapreneurs in the firm: it argues that these actors play a major role as well as entrepreneurs in the sense; they can initiate changes and innovations. Indeed, intrapreneurs defined as organizational members who go beyond their required duties to promote an innovative change, think like entrepreneurs and look for challenging opportunities to make organizations more profitable (D'amboise et Verna, 1993). They have to be imaginative, creative and can turn ideas or prototypes into profitable realities (Basso and Legrain, 2004). These qualities are key elements contributing into innovation. Despite the fact that many reports highlight the increasing impact of women in their organizations, enterprises and globally on their environment. However, the literature on intrapreneu’s profile ignores the gender difference and how that may affect organizations.

To explore innovative behavior, social and experimental studies focus on gender differences specially in terms of risk-taking. They show that women are more risk averse than men (Croson and Gneezy, 2009). This affected their reactions and feeling towards risky situations. In fact, men overestimate their skills and capabilities which lead them to underestimate risks. Men are supposed to like competition and to perceive risky projects as challenging situations. Unlike men, women avoid and overcome risky situations to escape penalties that could be generated. Furthermore, women are more easily and more affected than men by contextual

factors, for instance by the number of partners and their gender (Slovic et al., 2002; Loewenstein et al., 2001; Harshman and Paivio, 1987). However, all these results are not significant when samples consist of women that are involved in enterprise milieus (Schubert, 1999). It seems that professional experience diminishes women risk aversion and increases their willingness to trust and their confidence. To the best of our knowledge, studies do not scrutinize risks undertaking by women and whether the existent measures of risk capture risks taken by women. Moreover, the link between innovator's behavior behavior and innovations types is not yet analyzed.

The recent literature emphasizes that taking account of the gender perspective will help to better understand new ways of innovation, the innovator's behavior and therefore to better define innovation itself. Then it is urgent to reconsider innovation's definitions and rethink innovation by adding gender dimension (Johansson and Lindberg, 2011, Blake and Hanson, 2005). This will help to assess the individual characteristics and the environment of the innovator. In addition, it will help to overcome gender gap in the innovator profile literature.

Conclusion

The present paper shed light on the effect of normative thinking and stereotypes on explaining to a large extent why and how women are minorities when it comes to leadership and powerful positions in organizations. We show that it affects the way types/areas/determinants of innovations and innovator behavior are thinking and conceptualized. That helps understanding why feminine innovations and women-controlled industries are neglected and marginalized in the current literature despite the fact that recent statistics show that they have a considerable effect on the local economy landscape.

Recent studies provide strong evidence that the gender blind perspective when it comes to innovation prevent developing of more creative ideas, shares and behaviors which is going beyond assessing many growth opportunities (Vinnova, 2011).

“To include a gender perspective in analysis of an innovation milieus is not a matter of adding one more factor; it means highlighting one aspect of the system that yet yielding effects, regardless of whether these effects are measured or not” (Schiebinger, 2008).

It would be interesting to analyze innovation factors, innovator's profile and the determinants of innovation potential. Looking for individual characteristics and specificities is a challenging issue that will probably enhance our understanding of innovation. Gender

approach will offer an extended framework that goes beyond enterprise milieus and captures more features.

Key words: Gender, Innovation, Innovative behavior, Risk, Entrepreneurs, Intrapreneur.

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