



SCIENTIFIC FINAL REPORT

Two- and three-year projects and postdoctoral projects

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Project manager: Besrat Tesfaye

Project title: In the Service of the SMEs? The Patent Systems and the SMEs in the Baltic Sea Region

1. The three most important results of the project and what conclusions can be drawn from them

The primary aim of the study has been to explore whether the patent system disadvantages the Small and Medium Size Enterprises (SMEs). In view of the zealous global pursuit of standardization of the patent system, it is important to investigate if the patent system serves the SMEs as intended. The study focuses on SMEs in the Medical and Biotechnology industries. In addition to using aggregate data from patent databases, we have created a database of more than 200 SMEs by linking the patentees registration numbers to patents. The following are the three most important results and conclusions that emerge from the study.

First, most patents, irrespective of industry and locality, are accounted for by a few large companies (approximately 20). Likewise, a limited number of male inventors, about 25-30, are responsible for most patented inventions. A similar concentration of patents and inventors are observed even within the SMEs segment, particularly in the upper size-segment (size in number of employees). With minor variations between the two industries, female inventors and/or patentees constitute 1-3 percent. Since 1-2 women account for most inventions, women inventors/patentees are almost non-existent. In general, SMEs patent only once but tend to maintain their patents over its lifespan. Nonetheless, there are wide variations in patenting motives, behaviors, and strategies among the various size-segments within the SMEs. The most patent-productive size-segment appears to be firms with 10-49 employees. These results suggest that the patent system is not equally favorable across different size-segments in the industries. Size does matter. Moreover, the SMEs motives for patenting can be necessity or opportunity. Whether the patent system serves the needs of the SMEs may thus depend on their motives. Therefore, the question is not whether the patent system serves the needs of the SMEs, it is instead, under what circumstances the patent system serve/disadvantages the SMEs.

Second, although the studied countries espouse the regional and global standardization of the patent system, some, for example Finland and Estonia, offer a utility patent (model) as complementary/alternative option to ordinary patents. This institutional change is expected to be favorable to the SMEs and boost patenting activities. This indicates that the SMEs needs may not be served by the institutional standards such as the unitary patent to be implemented in the EU 2023.



Third result of our study is that gender matters. Patent research is largely based on aggregate patent data and pays little attention to size and gender variations. In particular, the patent system has seldom been considered from a gender perspective. Our study has explored the participation or rather the absence of women in inventive activities and their experiences of the patent system. The results indicate that women are most disadvantaged by the patent system. The experiences of the cases in our study show that there is a systematic institutional gender bias and mechanisms, including norms of masculinity and female stereotypes, that place women in a position where the credibility, legitimacy and visibility of their inventive/innovative capability is undermined. These are embedded and cannot be mitigated by sporadic interventions and support to women in inventors.

2. The project's contribution to the international research frontline

One contribution of the study is the investigation of the utility models (utility patents). Utility patents are expected to serve the needs of the SMEs (better than the ordinary patent system) and are increasingly used by different countries, such as Finland. Utility patents have a shorter lifespan and are less rigorous, but it takes less time and resources to register. However, the SMEs interest in and experiences of utility patents has not been explored before. Our study shows a continued increase in the registration of utility patents by SMEs in Finland and Estonia where this system has been implemented.

The second contribution of the study the consideration of the patent system from a gender perspective. Patent studies are primarily based on aggregate patent data and seldom explore the reasons behind the absence of women in inventive/innovative activities. The contribution of the study lies in the attempt to explore why women are absent and what their experiences of interaction with the patent system can reveal. An analytical model for the study of gender in an institutional context is suggested.

The third contribution is methodological. The concept SMEs includes a wide variety of size-categories that face differing challenges in their inventive/innovative endeavors. Patent statistics can seldom be used to explore the various SMEs segments and their conditions. Efforts were made to create a data base by linking the company's registration numbers to actual patent/s. This enables researchers to access patentees and patent owners, and study their strategies, opportunities, and challenges.

3. The contribution of the research to the knowledge of the Baltic Sea Region and Eastern Europe

The project has generated new knowledge on how similar institutions in different historical, cultural, and economic contexts relate to the conditions for the creative endeavors and innovative behaviors of the SMEs. How patent institutions accommodate SMEs needs while espousing the ongoing regional and global standardization process of the patent system. Finland, Estonia and Latvia have, for example, introduced utility patent (patent light), which has a shorter life span but requires less rigorous prosecution, has a shorter process timeline, and is thus faster and cheaper. The utility patent option seems to be boosting patenting activities among innovative SMEs. Another contribution to new knowledge is how similar institutions impact the creative endeavors of the genders. The percentage of women participating in creative and innovative activities in terms of patentees in Estonia and Latvia is more than twice that of Finland and Sweden. The patent



system was re-instated in Estonia and Latvia in the mid 90's but it is not clear whether/how this may relate to the higher participation of women.

4. New research questions that the project has led to

Size and/or gender variations in patenting activities are ultimately related to institutions and institutional changes. A useful example is the introduction of the utility patent. The impact of the introduction of utility patents on the SMEs but also with a view to the regional/global standardization of the patent institution should receive further attention. In the same vein, the differences in gender participation in different countries should receive more attention. It is quite intriguing to note that the participation of women appears to be much higher in the former socialist states (in Europe) compared to long standing and highly innovative market economies such as Sweden. Moreover, aggregate patent data offers little information about the specific patentees: size, gender or motives, strategies, and experiences. Therefore, efforts should be made to create data bases that allow more refined empirical analysis of patenting activities of SMEs in the Baltic Sea Region.

5. Dissemination of the results of the project within and outside the research community: public lectures, Conferences, publications,

Publications

Tesfaye, B. and Wainikka, C., (2022), Women Entrepreneurs in New Technology-Based Businesses in Sweden: Experiences as Inventors, Innovators, and Entrepreneurs, in Owalla, B., Vorely, T. Smith, E.L., (edit), *Gender, Diversity and Innovation: Concepts, Policies and Practice*, Edward Elgar Publishing

Tesfaye, B. and Borg, E. A., (2021), Flemingsberg som lokaliseringssmiljö för högteknologiföretag, in: *Att göra stad i Stockholms urbana periferi* / [ed] Malin Gawell; Apostolis Papakostas, Stockholm: Stockholmia förlag

Tesfaye, B. and Lundström, A. (2021), Managing the COVID-19 Crisis. A Case Study of Entrepreneurship and Social Responsibility in Swedish SMEs (2021), in: Sörensson, et al (ed), *Corporate Responsibility and Sustainability during the Coronavirus Crisis: International Case Studies*, Palgrave Macmillan

Tesfaye, B., Indiege, B., Towo, E., (2021), Institutional Constraints on Women Entrepreneurship in Tanzania, in: Lönnborg, M., et al (ed.), *Beyond Borders: Essays on Entrepreneurship, Co-operatives and Education in Sweden and Tanzania*, Södertörn Academic Studies

Tesfaye, B. and Lundström, A., (2019), Engaging Successful Migrant Entrepreneurs in Socially Responsible Causes: A Case from Sweden, in: *Responsible People: The Role of the Individual in CSR, Entrepreneurship and Management Education* / [ed] Francisca Farache, Georgiana Grigore, Alin Stancu and David McQueen, Cham: Palgrave Macmillan.



Wainikka, C., (2021), *Vad Sverige kan göra bättre. Finland som immaterialrättsligt föregångsland*, rapport, Svenskt Näringsliv.

Wainikka, C., (2021), *FoU-samverkan - Immaterialrätt som problem och lösning*, rapport, Svenskt Näringsliv.

Wainikka, C., (2020), *Att skydda innovationer - affärer, risker och möjligheter*, bok, Norstedts juridik.

Conferences and public lectures and conferences (Christina)

Tesfaye, B. and Lundström, A. (2022), Uniformity, inclusiveness, and sustainability: The Patent System and the SMEs, I9th ICSR Conference, Mid Sweden University, 15-16 September, 2022

SMEs and IP, seminar arranged by International Chamber of Commerce, 16 May 2022 (Christina Wainikka).

Women Entrepreneurs in Sweden: Experiences, Trends and Future Outlooks, webinar arranged by the Centre for Business Law at Lund University (ACLU) and The Institute for Innovation Management at Lund University School of Economics and Management, 14 September 2021 (Wainikka, C.)

IP Support for SMEs, SME Assembly (held by EU Commission), 16 November 2021 (a Wainikka, C.).

The Patent Paradox: Why are there so few female inventors, Nordic Female Investor Meetup, 27 October 2021 Wainikka, C.).

Intellectual Property Rights for SMEs, SME Assembly (held by EU Commission), 16 November 2020 (Christina Wainikka with Lars Holm Nielsen).

Planned conferences and seminars:

International Conference on Global Advances in Management and Economics
Zadar, Croatia, 16-17 June, 2023

Innovation by and for all, World Chambers Congress, 21-23 Juni 2023

Innovation is arguably even more necessary when starting a business. This session will oversee the importance of Intellectual Property for MSMEs and the role chambers can play in helping businesses make the most of IP.

(Christina Wainikka)

Planned publications:

The patent system and SMEs, disadvantage, and new directions (monograph)