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# A GENDER PERSPECTIVE IN HIGHER EDUCATION ON MEGATRENDS AND INNOVATIONS

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## Abstract

The current megatrends offer many innovation possibilities for women entrepreneurs. Women entrepreneurs often operate in the service sector, where digitalization can transform the industry. However, it has been shown that gender is a constraining structure within innovation systems. The objective for this paper is twofold: 1) to examine the attitudes of women entrepreneurs related to megatrends and the opportunities they offer for women entrepreneurs, and 2) to examine the attitudes of women entrepreneurs towards innovation processes in their own businesses. The data was gathered from women entrepreneurs and nascent women entrepreneurs in the region of South Ostrobothnia in Finland. The data consists of four focus-group interviews organized in February 2016. Altogether 28 entrepreneurs participated in the focus-group interviews. The participants are involved in the project where the focus is to improve women's digital and strategic capabilities and leadership. The focus-group interviews were the first contact with participants. The participants' businesses represent three different industries (retail, service and manufacture), but the most of them are on service sector. The results show that the attitudes related to megatrends are positive rather than negative. Positive attitudes related to feminine traits and competence of women entrepreneurs, possibilities for firm growth, new ways of doing business and family and work integration. However, also negative attitudes existed. These related to well-being, unbelief towards the statements, job loss, demand for new skills and more work and masculine connotations. Some psychological factors hinder the innovation processes of women entrepreneurs. First, current mental models have an effect what kind of innovations they can perceive. The second factor of note is the gendered construction of technology.

Keywords: Gender, higher education, megatrends, innovations

## 1 INTRODUCTION

Kiiski Kataja ([1]) submits that technology development is currently faster than ever – a high-speed technological transition is in progress represented by keywords such as digitalization, automation, robot control of production and services, biotechnology, technological evolution in pharmacology, rapid development of energy technologies, diffusion of digital crowd platforms, as well as the globalization of ICT services and production (including Industrial Internet). The author ([1]) also notes that the keys for coping in the changed world include developing new kind of creativity and problem-solving ability and increasing utilization of technologies. Business requires the ability for visionary value creation, i.e. the ability to understand what people want and need in their lives. Empathy and solutions for everyday problems can be the source as well as the target of innovation. Also in management, better understanding of the human factor and the creation of a genuine community must be emphasized. Ankeny ([2]) submit that the period between 2015 and 2020 will demonstrate virtually every facet of how we live and work. It will bring radical new technologies, new business models, new kind of customer experiences and new breed of entrepreneurs – a wave of so-called digital natives (generation Z) who think and act differently from every generation before them.

For women entrepreneurs the current megatrends offer many innovation possibilities. Women entrepreneurs often operate in the service sector, where digitalization can transform whole industries. However, it has been shown that gender is a constraining structure within innovation systems ([3]). Based on a wide literature review of gender and innovation, Alsos et al. ([4]) discuss research paths related to 1) gender differences and similarities in innovation, 2) gendered constructions of innovation and 3) gendering processes of innovation. Gender has an effect on how innovations are implemented: women's ideas are not implemented to the same degree as men's ([5]), and the whole construction of innovation is gendered with masculine connotations ([6]). Wikhamn and Knights ([7]) show that these masculine discourses are apparent also in open innovations. Alsos et al. ([4]) suggest more research on understanding women's innovation in context of normative frames and structural factors.

This paper contributes to understanding the attitudes of women entrepreneurs towards innovations in their own business. In particular, the study examines how women entrepreneurs see megatrends related to their own business and what kind of attitudes underlie in the innovation process. The objective for this paper is twofold: 1) to examine the attitudes of women entrepreneurs related to megatrends and in particular the opportunities they offer for women entrepreneurs, and 2) to examine their attitudes towards innovation processes in their own businesses.

## 2 LITERATURE REVIEW

Ernst & Young ([8]) identifies six megatrends that define our future: digital future, rising entrepreneurship, global marketplace, urban world, resourceful planet and health reimagined. Digital transformation is changing business models, including revenue models. At the same time, this brings opportunities for innovations. As the internet explosion continues to offer new networks and devices for distribution and consumption of goods, companies who miss the chance to innovate with new standards, new business models will be left behind as others rush to fill the gaps ([9]).

The explosion in device connectivity, data volumes and computing speed, combined with rapid advances in automated systems and artificial intelligence means that robotic devices can perform many tasks more quickly, more safely and more efficiently than humans ([10]). Robotization is affecting more areas of society than initially expected, including healthcare, transport, police, the armed forces, and the world of work, to name but a few. Freeman ([11]), in turn, stated that robots, that is any sort of machinery from computers to artificial intelligence that provides a good substitute for work currently performed by humans, can increasingly replace workers, even highly skilled professionals. It would be a mistake to assume that the structures of society remain unchanged when future technological developments, globalization and demographic changes occur. Gratton ([12]) submits some main changes: the traditional family will be re-organized, people are becoming more self-aware as their reflection power increases. In addition, the social power of women is changing, men will have a more balanced role, trust is an important factor in the functioning of society, people's happiness and well-being are not unambiguously correlated with economic growth, passive leisure is increasing in many societies.

According to Gratton ([12]) the changing social role of woman means that women will play a more prominent role in the management and leadership of companies and entrepreneurial businesses, with some joining the top echelons of the corporate elite. This change will affect the rules concerning working life but also life outside the workplace. Hajkovicz et al. ([10]) noted that in the future individuals will need to create their own jobs and this will require entrepreneurial skills and attitudes. Service sector jobs requiring social interaction skills and emotional intelligence will become increasingly important. The growth in technological capabilities is transforming supply chains, reshaping the workforce and redefining jobs.

The two concepts, gender and innovation, are defined and conceptualized by several different perspectives. Gender-related differences have been studied widely in the context of entrepreneurship. Brem ([13]) summarizes well-known statements about male and female entrepreneurs: women businesses under-perform in number of employees, sales turnover, etc; women business owners are less likely to own multiple businesses, less eager to plan expansion and tend to start smaller businesses with a smaller amount of start-up capital than men; the value assets in women businesses is significantly lower than in male businesses; men are more likely to want to grow their own business as far as possible, while women entrepreneurs prefer working part-time and in the service sector and finally, in comparison to men, women are more risk-averse and spend less time on networking.

Dodgson & Gann ([14]) define innovation as "what happens when new thinking is successfully introduced in and valued by organizations". They state that there are many ways of understanding innovation that provide a wide range of rich insights and perspectives: whether change is incremental or radical, how it sustains or disrupts existing ways of doing things, and if it occurs in whole systems or their components. McFadzean et al. ([15]) define innovation "as a process that provides added value and a degree of novelty to the organization and its suppliers and customers through the development of new procedures, solutions, products and services as well as new methods of commercialization". In any case, innovations are essential to social and economic progress and potential sources of innovation are growing rapidly.

Although entrepreneurship and innovation are closely related areas, the focus on gender in entrepreneurship and innovation research has been very different. According to Alsos et al. ([4]) research in this area is conducted in various disciplines applying a variety of methodological

approaches. Innovation is seen as one of the main ways to enhance economic growth and thus create prosperous nations and regions (see e.g. [16], [17]). Innovation is also considered crucial for technological development within industries and sectors (e.g. [18]). In entrepreneurial literature, innovation is a central aspect, as entrepreneurial processes require some form of innovation ([19]). Alsos et al. ([4]) submit that innovation literature has lately focused more upon innovation projects in firms and economical systems. The concept of gender and innovation has only recently gained a wider interest among researchers within the management and entrepreneurship fields but the literature does not give the innovator a specific role.

Thorslund and Göransson ([20]) commented on that in innovation system the smallest parts of the system are individuals, both men and women. Innovation, whether within firms (i.e. organization), between firms, in clusters or in innovation systems, is all about interaction between individuals – and these individuals are gendered ([17]). However, the gendered construction of innovation is linked to the definition of innovation. Further these definitions are operationalized and measured with masculine connotations ([4], [6]). The dominant conceptualization of innovation generally refers to certain kind of economic activity within sectors and industries dominated by both in terms of ownership and employment ([21]). Changes in gendered understanding of innovation outputs pave the way for a broader perspective to innovation outputs, and thus towards service innovation and social innovation, as legitimate innovation outputs ([22]). Alsos et al. ([4]) noted that the combination of adopting the perspectives of gender as a variable and innovation as a result is probably the dominant approach in empirical research on gender and innovation. This perspective is reflected in studies of innovation in men- and women-owned businesses, as well as in the literature on gender differences on patenting, commercialization, etc. in the university context. This literature is often quantitative, comparing the tendencies of women and men to contribute to innovation.

When applying an understanding of gender as a variable in studies one is often able to highlight gender differences in numbers, and to map these differences. When focusing on gender women are often perceived as one group with common needs, values etc. Differences within this group are not problemized. Gender studies with a feminist view, in turn, have an understanding of gender implying that women's experiences differ from men's. Opposite to the gender-as-variable understanding the aim with research within this paradigm is not to compare men and women, but exhibit women's needs and experiences and thereby give them a value, saying that women's way of thinking and doing things in business life is also necessary to develop industries and markets. From this point of view gender is social construction to which we all contribute and which is under constant change. This view has parallels in post-modern understanding of gender where gender researchers question the assumption that women is one homogenous group and have the same experiences. ([17])

Foss et al. ([5]) provided one explanation for women's inactivity in innovation. Based on their study, women are equally innovative in generating new ideas compared to men, but women's ideas are more seldom implemented in the organization. Further, their study indicates that women may suffer from a lack of collegial support in executing their ideas. Another explanation may be that women are not perceived as innovators, and consequently their ideas do not get heard in the first place, or they are deemed inferior to men's ideas and therefore never proceed to the implementation phase ([23]).

One important reason for this may be the in-built gender bias embedded in policy and research on innovation. Several scholars have pointed to the fact that studies considering similarities and differences between women and men in innovation outcomes may be inherently gender biased as they tend to focus on certain disciplines or industries, which have gender attached to them ([24], [25]). Women tend to specialise their businesses in sectors where innovation is less common, such as the retail trade, personal services and professional services ([26]). Ranga & Etzkowitz ([27]) argue that innovation is inherently gender-biased. They state that there is an implicit, socially-constructed assumption that women are less innovative than men, that men-dominated industries/sectors are more innovative than women-dominated ones, all rooted in a social perception of technology that is more often associated to men than to women.

Ljunggren et al. ([17]) performed a conclusion that the large amount of innovation studies up to this point, focus on industries dominated by men. Innovation happening in feminine sectors, i.e. where women work (in the service sector and in public sector), is scarcely studied, and hence, they have not been regarded as innovative. The authors conclude that this is an empirical fault which also stems from a narrow definition of innovation.

There seems to be a gender-difference also in the factors that motivate and encourage entrepreneurs to utilize new innovative technologies for innovations. BarNir ([28]) found in her study that men start

technologically new ventures for self-realization reasons, and that wealth seeking and employment reasons are negatively associated with the technology startup decision among women, but not among men. Also among women, general human capital (education and employment breadth) positively predicts the startup decision. Typically, technology has been seen to serve as an agent of male control infused with male values ([29]), but Ranga & Etzkowitz ([27]) argue that in recent years the traditional gendered nature of science and technology seems to have gradually evolved towards more gender equal formats.

In this study, we take the feminist view as a starting point: women are not a homogeneous group and gender characteristics are not permanent, they change when the world changes. Different generations of women are various and they respond differently to a changing world and new opportunities by innovating new approaches to business. Wajcman ([30]) raised that feminist theories of the relationship between gender and technology have taken diverse forms. While liberal feminism conceived of the problem as one of equality of access and opportunity, socialist and radical feminism analyzed the gendered nature of technology itself. In this study both the liberal as well the radical feminism are the gendered perspectives to innovations.

### **3 METHODS**

The data was gathered from women entrepreneurs and nascent women entrepreneurs in the region of Southern Ostrobothnia in Finland. The data consists of four focus-group interviews organized in February 2016. There were altogether 28 participants in the focus-group interviews: thirteen entrepreneurs and fifteen nascent entrepreneurs. The entrepreneurs operated on service, retail and industry sectors

Four statements about future trends were presented to the group and they were asked to discuss 1) about their feelings and thoughts related to the statement, 2) what kind of possibilities and innovations this trend would create to their own business, 3) do they see any obstacles in their own innovation process and 4) how this trend relates especially to women entrepreneurship.

Statements about the trends were based on report of Kiiski Kataja ([1]) about the megatrends. The statements were:

- 1) Empathy and solving everyday problems are the basis of future innovations. The focus in business is to increase the well-being and happiness of people instead of productivity.
- 2) Digitalization offers new possibilities for business. Services can be produced via internet and the whole business logic will change, including revenue models. More customers does not mean more work.
- 3) Technology creates possibilities for people to meaningful work with involvement. Human understanding and creation of a genuine community are the key stones in leadership.
- 4) Robotization will displace labored work. First will vanish routinized work and last evolving expertise.

All focus group interviews were recorded and transcribed. Data analysis was made with content analysis by coding and building categories. The goal of content analysis is to provide knowledge and understanding of the phenomenon under study. In coding phase, analytical coding was used. Analytical coding is a process of grouping open codes. Richards (2005) notes that analytical coding comes from interpretation and reflection on meaning.

### **4 RESULTS**

The results are presented in relation to research questions. First the attitudes of women entrepreneurs related to future megatrends and the opportunities on offer for women entrepreneurs in particular are presented and second their attitudes towards innovation processes in their own businesses. The attitudes are classified as positive or negative

#### **4.1 Attitudes of women entrepreneurs related to megatrends**

Attitudes towards the presented statements were more positive than negative. Positive attitudes related to 1) feminine traits and competence of women entrepreneurs, 2) possibilities for firm growth, 3) new ways of doing business and work and 4) family and work integration. Negative attitudes related to 1) well-being, 2) unbelief towards the statement, 3) job loss, 4) demand for new skills and more work and 5) masculine connotations.

The statement that empathy and problem solving will be a basis for future innovations made entrepreneurs to think the many possibilities for their own business. The positive attitudes related to women competence and traits that become more important in the future. They thought that empathy is more inherent for women than for men, which will give advantage to women leadership. One of the entrepreneurs said: "If we women can concentrate on leadership and management and just be with other people, machines will do the rest and men can fix the machines...women can become leaders with their skills in empathy and social networking..."

Also the entrepreneurs saw possibilities for firm growth. Technology was seen as a way to build community also with new customers and other stakeholders. There were many entrepreneurs operating in the service sector. They particularly thought that sparring and mentoring will become more important in the future, which will give growth opportunities for their business. Also the focus on empathy is an advantage in their own business.

Negative attitudes related to well-being. Entrepreneurs thought that the well-being of people has diminished because there is a strong need for empathy and compassion. They also said that happiness is wrongly understood. People are continually searching for happiness that does not exist. One of the entrepreneurs state: "People are not doing so well nowadays and they just don't admit that to themselves. People have become more self-centered."

Next statement related to possibilities of digitalization. There seem to be both positive and negative attitudes towards the statement. Positive attitudes related to new ways of doing business and work, possibilities for firm growth and to feminine traits and competence of women entrepreneurs. Entrepreneurs saw that services can be produced via internet and digitalization can help customers and also entrepreneurs in time allocation.

New markets and new revenue models can be created. One of the entrepreneurs describe the situation as follows: "Digitalization and new technology can help marketing to be quicker and information can be spread widely. I am developing this in my company so that we can reach those potential customers that are interested in our services."

They also thought that womens have more capability than men to do many things simultaneously. This can give advantage when working in many layers with digital tools. However, also negative attitudes emerged. Some of the entrepreneurs did not believe in the statement that masses can be served through internet and with empathy. Empathy and technology were seen opposite trends and some of the entrepreneurs did not believe that digitalization will not mean more work. Many entrepreneurs also thought that digitalization will mean more work because they have to be active in different social media. Also there will be demand for new skills that entrepreneurs do not have. Negative aspect was raised also related to masculine connotation of technology. Some entrepreneurs thought that technology is an area for men and not for women. However, younger entrepreneurs seemed to have more positive attitude towards technology. Some entrepreneurs also thought that the word technology has a masculine connotation in itself. One on the entrepreneurs said: "In Finland technology has been an area for men and still is. We have to break that."

Next statement related to technology as it creates possibilities for people to meaningful work with involvement. Human understanding and creation of a genuine community are the key stones in leadership. Positive attitudes for this statement related to new ways of doing business and work, possibilities for firm growth and family and work integration. Entrepreneurs saw that technology enables to work anywhere and anytime and in this way time management will become easier.

Firm growth was seen possible through internationalization; technology brings customers near wherever they are. Technology will give new and easier ways to marketing and building customer commitment. Entrepreneurs also thought that family and work integration will become easier when there is a possibility to work home. One of the entrepreneurs described this as follows: "Technology enables me to do things that make me happy, I can influence how I do my work. This gives me a possibility to allocate my time so that I can spend more time with my children."

Negative attitudes related to well-being and job loss. Some entrepreneurs thought that technology will take all the time. They were also afraid that some people will lose their job.

Last statement related to robotization that will displace labored work. First will vanish routinized work and last evolving expertise. Entrepreneurs saw this creating new ways of doing business and work. Robotization enables people to do more interesting and valuable work when robots can do the routine work. Positive attitudes related also to feminine traits and competence of women entrepreneurs. Entrepreneurs thought that a society where more humane and complex competence is required will give

women entrepreneurs many possibilities when women dominant sectors (like service) will become more important.

Table 1. Attitudes of women entrepreneurs related to megatrends.

Statement about the megatrend	Positive attitudes	Negative attitudes
<p>Empathy and solving everyday problems are the basis of future innovations. The focus in business is to increase the well-being and happiness of people instead of productivity.</p>	<p><i>Feminine traits and competence of women entrepreneurs</i></p> <ul style="list-style-type: none"> <li>- Women have more capability for empathy than men → possibilities for new innovations</li> <li>- Future leaders women</li> </ul> <p><i>Possibilities for firm growth</i></p> <ul style="list-style-type: none"> <li>- Sparring and mentoring more important in the future, the focus is right in own business</li> <li>- Personalized service even more important in the future, focus on empathy in own business</li> <li>- Technology is a way to build community, not a threat</li> </ul>	<p><i>Well-being</i></p> <ul style="list-style-type: none"> <li>- The well-being of people has diminished, longing for empathy and compassion</li> <li>- Happiness wrongly understood: you can't find happiness if you try</li> </ul>
<p>Digitalization offers new possibilities for business. Services can be produced via internet and the whole business logic, including revenue models will change. More customers does not mean more work.</p>	<p><i>New ways of doing business and work</i></p> <ul style="list-style-type: none"> <li>- services to internet</li> <li>- help customers</li> <li>- time allocation for right things</li> </ul> <p><i>Possibilities for firm growth</i></p> <ul style="list-style-type: none"> <li>- new markets</li> <li>- new revenue models via internet</li> </ul> <p><i>Feminine traits and competence of women entrepreneurs</i></p> <ul style="list-style-type: none"> <li>- Women have capability doing more things simultaneously than men --&gt; possibilities use digitalization and work in many layers</li> </ul>	<p><i>Unbelief</i></p> <ul style="list-style-type: none"> <li>- No belief in serving masses through internet</li> <li>- No belief that this does not mean more work</li> <li>- How empathy can be delivered through internet</li> </ul> <p><i>Demand for new skills and more work</i></p> <ul style="list-style-type: none"> <li>- More work, have to be active in the social media all the time</li> <li>- Demand for skills that entrepreneurs do not have yet</li> </ul> <p><i>Masculine connotations</i></p> <ul style="list-style-type: none"> <li>- Technology an area for men, not for women</li> <li>- Masculine connotation of technology</li> </ul>
<p>Technology creates possibilities for people to meaningful work with involvement. Human understanding and creation of a genuine community are the key stones in leadership.</p>	<p><i>New ways of doing business and work</i></p> <ul style="list-style-type: none"> <li>- possibilities to work anywhere and anytime</li> <li>- managing time becomes easier: doing things that matters</li> </ul> <p><i>Possibilities for firm growth</i></p> <ul style="list-style-type: none"> <li>- possibilities for internationalization</li> <li>- new and easier ways to marketing</li> </ul>	<p><i>Well-being</i></p> <ul style="list-style-type: none"> <li>- technology takes all the time</li> </ul> <p><i>Job loss</i></p> <ul style="list-style-type: none"> <li>- Some people will lose their job</li> </ul>

	<ul style="list-style-type: none"> <li>- possibilities for customer commitment through technology</li> </ul> <p><i>Family and work integration</i></p> <ul style="list-style-type: none"> <li>- possibilities to work at home and to be with family</li> </ul>	
<p>Robotization will displace labored work. First will vanish routinized work and last evolving expertise.</p>	<p><i>New ways of doing business and work</i></p> <ul style="list-style-type: none"> <li>- No more uninteresting routine work</li> <li>- More time for valuable work</li> </ul> <p><i>Feminine traits and competence of women entrepreneurs</i></p> <ul style="list-style-type: none"> <li>- Society where more humane and complex competence is required, women entrepreneurs will come more important (also the women dominant sectors like service)</li> </ul>	<p><i>Well-being</i></p> <ul style="list-style-type: none"> <li>- When physical exercise through work diminishes because of robots, consequences for health may become radical</li> <li>- People become stupid</li> <li>- Robots opposite to empathy</li> <li>- Job loss</li> <li>- People's handicraft can vanish, skills vanish</li> <li>- If robotization displace labored work, what will people do?</li> <li>- Who stays and who does not - inequality</li> </ul>

#### 4.2 Attitudes of women entrepreneurs related to innovation processes in their own business

There were positive and negative attitudes towards innovation processes in woman entrepreneurs' own business. Women entrepreneurs saw many positive aspects in innovation. They believed that new technological innovations are possible in their own business and these innovations can relate to personalization, commitment, meeting customers in new ways, using empathy as an advantage in competition, building community and social relations in new ways. Women entrepreneurs thought that with these aspects they have capability to innovate and use women's strengths also in new innovations and in the innovation process. Particularly empathy and leadership skills were seen as core competences of women entrepreneurs.

Innovation was hindered by funding. Women entrepreneurs felt that there is no sufficient funding for innovation activity. Despite of the positive thoughts about their competence and skills, some of the entrepreneurs also felt that they did not have enough required skills for new innovations. This was especially related to language skills when thinking about internationalization of new innovations. The most important problem with the innovation process were mental models. Majority of the women entrepreneurs felt that existing mental models hindered their innovation activity; mental models dictate what can be done and how. They were also afraid of the constant need for developing and managing things. One of the entrepreneurs described this as follows: "My own thoughts and models hinder really much the ideas and new innovations." Also another entrepreneurs said: "The things inside my head are the biggest obstacle for my innovation process".

One of the entrepreneurs also reflected her own history, how it influences her mental models: "I represent a different generation than younger entrepreneurs. My history has an influence on my ability to use technology and digitalization, I have to do more work than younger generation in learning new technology". Table 2 summarizes the attitudes related to innovation process. Tables and figures should be centred and are numbered independently, in the sequence in which you refer to them in the text. Use the abbreviation "Fig. 1", even at the beginning of a sentence. Figure captions should be below figures and graphics should be accompanied by a legend; table heads should appear above tables.

Table 2. Attitudes towards innovation processes of women entrepreneurs in their own business.

Positive aspects	Negative aspects
<p>New technological innovations especially related to</p> <ul style="list-style-type: none"> <li>• personalization,</li> <li>• commitment,</li> <li>• meeting,</li> </ul>	<p>No required competence or skills</p> <p>No requested funding</p>



<ul style="list-style-type: none"> <li>• empathy,</li> <li>• community,</li> <li>• social relations</li> </ul> <p>Capability for innovation  Innovations related to women's strengths  → Empathy and leadership skills with women</p>	<p>Mental models (what can be done),  innovation hindered by own thoughts</p> <p>Constant need for developing and  managing things</p>
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## 5 CONCLUSIONS

The objectives for this paper was first to examine the attitudes of women entrepreneurs related to megatrends and the opportunities they offer for women entrepreneurs and second to examine their attitudes towards innovation processes in their own businesses.

The results show that the attitudes related to megatrends are positive rather than negative. Positive attitudes related to feminine traits and competence of women entrepreneurs, possibilities for firm growth, new ways of doing business and family and work integration. Women see many possibilities for innovations in their own businesses. In addition, they feel that some attributes usually associated with women, e.g. empathy, will be more important in the future as both sources of innovation and as sources of competitive advantage as innovations are realized.

However, also negative attitudes existed. These related to well-being, unbelief towards the statement, job loss, demand for new skills and more work and masculine connotations. Some psychological factors hinder the innovation processes of women entrepreneurs. First, current mental models have an effect what kind of innovations they can perceive. The second factor of note is the gendered construction of technology. Older women entrepreneurs feel that technology is usually an area for men and that innovations in digital age require technological understanding and abilities. However, there is a difference in attitudes between the younger nascent entrepreneurs and the older entrepreneurs. Younger nascent entrepreneurs saw no difference between men and women regarding technological abilities. It may be that the ongoing transition in the society has already shaped the connotations related to technology and innovations for younger entrepreneurs who have less to unlearn. Younger women entrepreneurs have embedded themselves in the digital age and feel no difference relative to men in adopting or innovating new technology. How technology and innovations are presented in different school levels is of importance here. For example Fogelberg Eriksson ([31]) showed in her study how a gender perspective can generate innovations within upper secondary school. In case of the older generation, a life-long learning perspective is critical: older women entrepreneurs need platforms where they can reflect on their ideas about their own business and possible new innovations in relation to new technology, because the usage of iPads or social networks or apps, make even older people act like Millennials. This influences the way entrepreneurs make decisions and where they go for information.

We live, as is so often said, in volatile, uncertain, complex, changing and ambiguous times. The world of the future will demand capacities that currently comprise mere options. Hajkowicz et al. ([10]) demonstrate that there will be a need for new ways of thinking, planning, directing, communicating and managing. In the future, there is increasing interest in the 'soft skills' of potential employees and entrepreneurs, namely personal, interpersonal and organisational skills. Such skills are critical in future in terms of career and life success. These include willingness to learn, interpersonal and communication skills, attitude and work ethic, self-management, teamwork and motivation, as well as critical thinking and imagination. Innovative thinking and self-development as professionals are factors that often may lack from young employees. Problem-solving skills and capabilities, including creativity and persuasion, will also be required to fulfil abstract, non-routine tasks, which are less likely to be computerized. At the same time, surveys of the upcoming generation of employees (Generation Z) indicate that they are likely to be comfortable working with technology but may be missing the core soft skills. Soft skills development is therefore likely to become a key part of the agenda of educational providers as well as employers over the coming decades.

Feminist studies have demonstrated how the concept of innovation is highly gendered, implying that there is a strong male connotation ([21], [32], [24]). This is evidenced by the types of innovations supported by public bodies and in how innovation is measured in national statistics. In this study women entrepreneurs experienced challenge to find financing to their innovations. Maybe public support and also private financiers consider women's innovations less significant or less potential. As a result of gendered constructions of innovation, public support for innovation or R&D is mainly given to men or provided by men. Previous studies confirm that there is a strong association between masculinity,

science and engineering, and innovation; and that these processes are intertwined ([30], [33], [32]). Recently, the innovation concept has been broadened both in research and policy to cover more areas than technology and patents and, thereby, include service sector innovations and open innovation processes. Public financing, however, provided to services are targeted to areas that are strongly associated with men and engineering. This is in relation to who are acknowledged as innovators and what is acknowledged as innovations. Wikhamn and Knights ([7]) show how the change from “hard” to “soft” product could be viewed as acknowledging other actors in the organization as contributing to innovation.

In society, there is a feminist resistance where hegemonic masculine discourses are contested. As a consequence of this resistance, existing gender stereotypes in policies, processes and networks of innovation are challenged. Women entrepreneurs feel that digitalization and new technologies are for men - there were strong masculine connotation of technology. However, younger nascent entrepreneurs have no differences between genders regarding technology and technological skills. It can be concluded that gender is socially constructed structure, which changes with the change of the world. Also collegial support for innovation is easier for young nascent entrepreneurs as for older ones, because they have already had the chance to experience on their own and other women's talents during their studies.

In the future the scale what is possible is changing considerable. An explosion in drone applications, with entrepreneurs utilizing them for data gathering and for services. Another megatrend is extreme personalization: the right things in the right time and place and consequently, service providers that can provide it to ME. We are gradually moving to the Sheconomy – economies where women are in charge or they are key actors in marketplaces as entrepreneurs and consumers. This is happening all over the world. At this moment the challenge is to break through social feminist resistance, masculine connotations of economy and innovation and attitudes about technology as masculine area. These all are hindering women’s innovations today. But in Sheconomy things are different.

## REFERENCES

- [1] E. Kiiski Kataja, “*Megatrends 2016: The future happens now*”, Helsinki: Sitra, 2016.
- [2] J. Ankeny, “20/20 Visions. How the next five years will revolutionize business,” *Entrepreneur*, January 2015.
- [3] E. Sundin, “Entrepreneurship, Innovation and Gender: The construction of projects for entrepreneurship and innovation in the healthcare and care sectors.” In Book *Promoting innovation: policies, practices and procedures* (Eds. S. Andersson, K. Berglund, E. Gunnarsson & E. Sundin), pp. 155-172. Stockholm: Vinnova. 2012
- [4] G. Alsos, E. Ljunggren, E. & U. Hytti, “Gender and innovation: state of the art and a research agenda,” *International Journal of Gender and Entrepreneurship*, vol. 5, no. 3, pp. 236-256, 2013.
- [5] L. Foss, K. Woll & M. Moilanen, “Creativity and implementations of new ideas,” *International Journal of Gender and Entrepreneurship*, vol. 5, no. 3, pp. 298-322, 2013.
- [6] K. Pettersson & M. Lindberg, “Paradoxical spaces of feminist resistance,” *International Journal of Gender and Entrepreneurship*. vol. 5, no. 3, pp. 323-341, 2013.
- [7] B. Wikhamn, & D. Knights, “Open innovation, gender and the infiltration of masculine discourses,” *International Journal of Gender and Entrepreneurship*, vol. 5, no. 3, pp. 275-297, 2013.
- [8] Earnst & Young, “*Megatrends 2015. Making sense of a world in motion*,” Retrieved from [http://www.ey.com/Publication/vwLUAssets/ey-megatrends-report-2015/\\$FILE/ey-megatrends-report-2015.pdf](http://www.ey.com/Publication/vwLUAssets/ey-megatrends-report-2015/$FILE/ey-megatrends-report-2015.pdf), 2015
- [9] R. Gulati & T. Soni, “Digitization: A Strategic Key to Business,” *Journal of Advances in Business Management*, vol. 1, no. 2, pp. 60-67, 2015
- [10] S. Hajkowicz, A. Reeson, L. Rudd, A. Bratanova, L. Hodggers, C. Mason & N. Boughen, *Tomorrow’s digitally enabled workforce. Megatrends and scenarios for jobs and employment in Australia over coming twenty years*. Csiro Australia, 2016.
- [11] R.B. Freeman, *Who owns the robots rules the world*. IZA World of Labor, 5. 2015.

- [12] L. Gratton, "The future of work," *Business strategy review*, vol. 21, no. 3, pp. 16-23, 2010.
- [13] A. Brem, A. *The Boundaries of Innovation and Entrepreneurship*, Wiesbaden, Gabler Verlag, 2008.
- [14] M. Dodgson & D. Gann, *Innovation*. New York, Oxfors University Press, 2010.
- [15] E. McFadzean, A. O'Loughlin & E. Shaw, "Corporate entrepreneurship and Innovation Part 1: The Missing Link," *European Journal of Innovation Management*, vol. 8, no. 3, pp. 350-372, 2005.
- [16] J. Fagerberg, D. Mowery & R.R. Nelson, *The Oxford Handbook of Innovation*. Oxford University Press, 2005.
- [17] E. Ljunggren, G.A. Alsos, N. Amble, R. Ervik, T. Kvidal & R. Wiik, R. *Gender and innovation. Learning from regional VRI-projecs. NF-rapport nr. 2/2010*. ISBN-nr: 978-82-7321-591-8, 2010.
- [18] F. Malerba, "Sectoral systems of innovation and production," *Research Policy*, vol. 31, no. 2, pp. 247-264, 2002.
- [19] S.A. Shane, *General Theory of Entrepreneurship: The Individual-Opportunity Nexus*, Cheltenham, Edward Elgar, 2003.
- [20] J.G. Thorslund, & U Göransson, "Könsblinda innovationssystem – genusanalys av några centrala begrepp i VINNOVAs verksamhet," Arbetsrapport i FoU-projektet Jämställdhet och Genusvetenskap, Stockholm, Vinnova, 2006..
- [21] M.K. Blake & S. Hanson, "Rethinking innovation: Context and gender," *Environment and planning A*, no. 37, pp. 681-701, 2005.
- [22] B. Wikhamn & D. Knights, "Open innovation, gender and the infiltration of masculine discourses," *International Journal of Gender and Entrepreneurship*, vol. 5, no. 3, pp. 275-297, 2013.
- [23] R. Cooper, "The gender gap in union leadership in Australia: a qualitative study," *Journal of Industrial Relations*, Vol. 54, No. 2, pp. 131-146, 2012.
- [24] J. Nählinder, M. Tillmar & C. Wigren-Kristoferson, "Are women and male entrepreneurs equally innovative? Reducing the gender bias of operationalisations and industries studied" In *Promoting Innovation – Policies, Practices and Procedures*, (Eds. S. Andersson, K. Berglund, J.G Torslund, E. Gunnarsson, & E. Sundin), Stockholm, Vinnova, 2012.
- [25] T. Kvidal & E. Ljunggren, "Introducing gender in a policy programme: a multilevel analysis of an innovation policy programme," *Environment & Planning C*, vol. 31, 2013.
- [26] E. Nissan, I. Carrasco & M.S. Castanõ, "Women entrepreneurship, innovation and internationalization", In *Women's Entrepreneurship and Economics. New Perspectives, Practices, and Policies*, (Eds. M.A. Galindo, & D. Ribeiro), New York, Springer NY, 2012.
- [27] M. Ranga & H. Etzkowitz, "Athena in the World of Techne: The Gender Dimension of Technology, Innovation and Entrepreneurship," *Journal of Technology Management & Innovation*, vol. 5, no. 1, pp. 1-12, 2010.
- [28] A. BarNir, "Starting technologically innovative ventures: reasons, human capital, and gender," *Management Decision*, vol. 50, no. 3, pp. 399-419, 2012.
- [29] J. Rothschild, *Machina Ex Dea: Feminist Perspectives on Technology*. New York, Pergamon, 1983.
- [30] J. Wajcman, *TechnoFeminims*, Cambridge, Polity Press, 2004.
- [31] A. Fogelberg Eriksson, "A gender perspective as trigger and facilitator of innovation," *International Journal of Gender and Entrepreneurship*, vol. 6, no. 2, pp. 163-180, 2014.
- [32] S. Marlow & M. McAdam, "Analyzing the influence of gender upon high-technology venturing within the context of business incubation," *Entrepreneurship Theory & Practice*, vol. 36, no. 4, pp. 655-676, 2012.
- [33] K. Dautzenberg, "Gender differences of business owners in technology-based firms", *International Journal of Gender and Entrepreneurship*, vol, 4, no. 1, pp. 79–98, 2012.