

Development paper stage

Title old: “career satisfaction and innovation - the role of gender, work-life balance and culture in the innovation ecosystem of Oxfordshire”

Title new: “The role of career satisfaction as a mediator for the relationship between masculine culture and innovation in the innovation ecosystem of Oxfordshire”

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Summary:

Innovation is the driving force behind economic success. To ensure ongoing innovation and competitiveness on the market the use of the full talent is required. Despite previous efforts to attract, retain and equally promote women, their representation in the innovation sector, especially in leadership and R&D positions, lags behind that of men's. To work towards eradicating those inequalities this research applies the theoretical framework of the gendered organisation by Acker in the masculine dominated innovation ecosystem of Oxfordshire. To understand how career satisfaction mediates the relationship between masculine culture and innovation applying a gender and intersectionality lens, this research takes a multi-level mixed method approach. Especially, after the Covid-19 pandemic that resulted in new ways of living and working this research is right on time. The goal is to develop guidance and policies to eradicate inequalities and contribute to the local and national industrial strategy in the UK.

Introduction

In the previous years, diversity and intersectionality have come into focus of the public eye. Consequently, organisations were forced to comply with the demands of public movements and become more inclusive and diverse.

Achieving equal representation at the higher managerial ranks requires equal career development opportunities. All efforts to implement policies and create change still do not show the anticipated effects on an equal and inclusive work environment where innovation can thrive (Leslie, 2019).

Consequently, on top of implementing policies and career guidelines companies also need to revisit their company culture to ensure the success of their policies.

For organizations to stay competitive on a national and international scale they need to innovate. Innovation is the driving force behind economic success, growth, and sustainability for organisations (Verspagen, 2005; Rocha, Mamédio and Quandt, 2019). Despite efforts to attract and retain women, whilst equally promoting women, masculine work environments, such as the innovation ecosystem in Oxfordshire on which this research focuses, are still dominated by inequalities. Delivering successful innovations are reliant on the engagement of the full workforce where those inequalities can function as roadblocks (Leone and Belingheri, 2017; Hewlett, Marshall and Sherbin, 2013; Bassett-Jones, 2005).

Previous research has long argued that a diverse workforce is necessary to ensure an open innovative culture and that diversity addresses diverse social needs which must be reflected in organisations. At the same time diversity leads to diverse thinking and consequently resulting in innovation (Richard, Murthi and Ismail, 2007; Dwyer, Richard and Chadwick, 2003; Yang and Konrad, 2011; Hewlett, Marshall and Sherbin, 2013).

Organisations have never been fully inclusive but the Covid-19 pandemic has changed ways of living and working and may have compounded inequalities in the workforce further (Mooi-Reci and Risman, 2021). Many employees had to manage the double burden of work and home related responsibilities such as childcare or elder care. This double burden was taken on in many cases by women and minoritized groups hampering diversity in the workforce further (Ellingrud *et al.*, 2020). This is reason enough to revisit diversity and intersectionality in the light of the changing world of work due to Covid in order to inform future policies that do not increase inequalities further and rather eliminate them. Organisations are now facing an intense period of change, after emerging from the pandemic, making this period a timely opportunity to analyse change and suggest evidence-based recommendations to support diversity and inclusion in the innovation sector.

This research is embedded in the innovation ecosystem of Oxfordshire in the UK. An innovation ecosystem is a group of companies from various industries (e.g. pharmaceuticals and biotechnology, energy, engineering, aerospace and defence etc.), as well as institutions that collaborate and compete for their innovative success (Granstrand and Holgersson, 2020). Companies in this type of ecosystem need to innovate to stay competitive in the market and, as such, a lack of diversity brings huge challenges. In addition, considering that organizations are gendered and not sufficiently inclusive, companies in the innovation ecosystem fare worse than others because they mostly tend to be rather androcentric and masculine. Out of the 110 innovation-based companies, 90 % have a men for their CEO and 85 % have been founded by a man compared to only 15 % with at least one founder who is a woman (Still and Manfredi, 2021). Previous policies seem to have had limited effectiveness and not led to the change they sought to make. Consequently, companies in the Oxfordshire region claim that the lack of gender diversity is the next challenge they would like to tackle to ensure an inclusive talent pipeline and promote inclusive innovation (AdvancedOxford, 2021).

Oxfordshire is particularly important as a regional context because it is a hub for research and innovation, has a highly-skilled workforce drawn from two renowned universities, world-class science and technology business parks, and it has the UK's highest rate of spinouts. Finally, it contributes to the innovative excellence of the UK as one of the strongest engines of growth (GoV).

Acknowledging those inequalities in the innovation ecosystem and looking into the masculine context of the ecosystem and the lack of skills that has further increased with Covid since especially women were driven out of the workforce and faced issues with career advancement this research takes career satisfaction into account. There are roadblocks in women's careers that might cause highly skilled women to leave the workforce who could contribute to innovation (Carli, 2020). Consequently, this paper explores how satisfied employees are with their career. Hence career satisfaction is added as a mediator in the relationship between masculine culture and innovation taking the innovation ecosystem of Oxfordshire as an exemplar by applying a gender lens.

The gendered organisation

This research builds on the theoretical framework of the "gendered organisation" and "inequality regimes" by Acker. Inequalities on the labour market are shaped by the presence of gender and its processes that create inequalities reflected in processes, interactions between employees, underlying pay inequalities, power distributions, as well as organisational culture. The way work and life is practiced in an organisations with the underlying concept of gender is called the 'gendered organisation' (Britton, 2000, p. 419; Acker, 1990). The gendered organisation is not only about the number of women and men, and potentially imbalanced in this respect. It also speaks to how gender is symbolically and ideologically described, and conceived as 'feminine' and 'masculine', where the former is typically valued less (Britton, 2000, p. 420).

To understand the implications for innovation ecosystems it is essential to investigate how these gendered patterns are formed and maintained – which requires a glance into an organisation's structure, processes, and culture. To summarise, while the patterns of the gender division vary from organisation to organisation, it becomes apparent that in most cases men are in the highest positions of organisational power whose decisions initiate the gender division dominating the structure and the culture when organisational practices such as barriers to career progression maintain them. Including an analysis of gender is crucial to understanding an organisation and ensuring the success of the implementation of potential policies reacting towards the inequalities (Acker, 1990, p. 146).

The Masculine Culture

The majority group, men, construct an exclusionary and gendered culture, marginalise the minoritized group (women), and facilitate gendered practices such as giving precedence to other men in management by employing masculine models, stereotypes, and symbols while remaining the status quo (Broadbridge and Simpson, 2011, p. 473). This becomes evident in promotion practices but also any policy implemented to ensure equal representation will not be successful. The gendered culture and practices need to change for policies to work. Competitiveness and emotional detachment are related to masculine dominated cultures, further diminishing women. This means that equal opportunity measures frequently fail to have an impact on the gendered character of organizational power since the masculine dominated culture is so resilient (Broadbridge and Simpson, 2011). So by framing organisations as gendered, researchers suggest that organizational environments are predominantly constructed by, and represent, the interest of men and the experience of men as workers which makes it difficult for women to find their place in the organization as well

as advance in their careers (Britton, 2000, p. 426). A masculine culture is discouraging an inclusive and open-minded culture hence hampering the contribution to innovation shaping the future of the innovation in a highly innovative area such as the innovation ecosystem.

H1: “The increase in masculine culture is negatively associated with innovation”

Career Satisfaction

There is an assumption that solely increasing a numerical balance between women and men in the top positions of organisational power reinforces rather than destabilises the normative power of men, as women take up masculine practices and values (Lewis and Simpson, 2012, p. 153). Consequently, an equal representation at the highest position of organisational power can only be achieved by ensuring there are equal career development opportunities to ensure an equal representation of candidates when those position of power are filled (Ng and Sears, 2017). The imbalances at the top postulate the assumption that career barriers differ between women and men. Nevertheless, considering gender on its own is not sufficient, other characteristics and their intersectionality such as education, age etc. need to be investigated as well (Fielden *et al.*, 2001; Bury, 2010). Greater awareness and attention to heterogeneity within the group of women may lead to more robust and positive outcomes when considering potential policies to remove inequalities and roadblocks (Khilji and Pumroy, 2019). Career and skillsets are an important mechanism for women to withstand in a gendered organisation, but since women’s technical skills are underestimated due to the existence of gendered frameworks it becomes challenging for women to navigate through the context of a masculine environment (Kenny and Donnelly, 2020). Differences in characteristics such as education, experience, and specialized skills can also impact the existence of inequalities. Especially in the gendered organisation where the environment is dominated by men, those inequalities can further hamper the progression opportunities (Dattero and Galup, 2005). Not being able to progress sufficiently in the career impacts innovation since women might leave the workforce and stop innovating (Allen *et al.*, 2006).

H2: “Rising career satisfaction is positively associated with innovation.”

Career Satisfaction as a mediator

Establishing that both culture and career satisfaction are crucial for innovation, the question is how are those two concepts related when it comes to innovation. Culture in masculine settings matters for equal career opportunities, but also for the contribution to innovation and the successful implementation of policies (Zimmerman and Clark, 2016; Armstrong, Riemenschneider and Giddens, 2018; Servon and Visser, 2011). Various researchers found that the gendered corporate culture can form an obstacle to women’s careers, which can then impact innovation activity (Makarem and Wang, 2020; Legault and Chasserio, 2012). A call for a change in culture is becoming visible in existing research to create an equal experience for women and men (Sharp *et al.*, 2012). While early scholars have already highlighted the importance of culture when it comes to women’s career when different gender role norms, family models, and cultural values were prevalent it becomes evident that the cultural barrier still dominates inequalities (Noble, 1987). Hence the following hypothesis considers career satisfaction as a mediator.

H3: “Career satisfaction mediates the relationship between masculine culture and innovation”

The Shaping of Inequality Regimes

The concepts: career and culture as elements of the gendered organization shape and maintain inequalities and it is important to say that all organizations have those inequality regimes. To eradicate those inequalities, it is essential to find out where in the career development and promotion processes as well as culture and policies the inequalities are maintained and where they reside within an organisation. Inequality regimes are challenging due to their changing and fluid nature. They are closely intermingled with society and the context. Even though inequality regimes can be challenged and changed, it is difficult and change often fails which is an attempt to explain why so many organisational equality projects fail (Acker, 2006). A diagram below shows how the concepts come together before the methodology section debates their measurement.

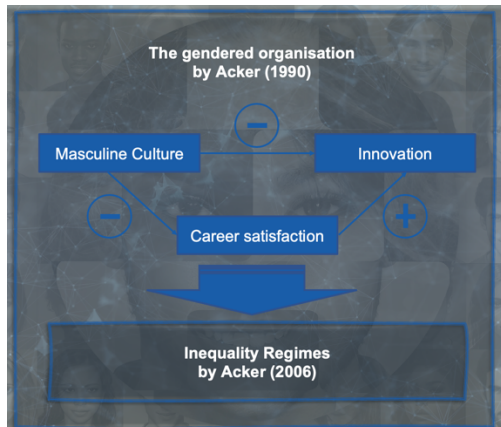


Figure 1: Display of hypotheses in the theoretical model

Methodology

The following discusses the measurement of the model and the instrument of analysis. This research is part of a wider multi-level mixed-method research project. It uses surveys to examine masculine culture, career satisfaction, and innovation as well as gender and intersecting characteristics. For the online survey the platform Qualtrics was used, completion required between 15-20 minutes. The sample currently includes 94 women and 110 men in 26 different organisations from 8 different industries in the Oxfordshire innovation ecosystem. The quantitative data was then analysed with STATA and MLwiN using a multi-level random intercept model (Charlton, 2022). Having hierarchical data, using a single level regression analysis makes it impossible to understand how much variation is at the employer level, and how much is at the employee level. Consequently, this paper considers employer level characteristics and how much of an effect the employer has on innovation by using the random intercept model and see how much variation is at each level (Modelling, 2023).

Below table shows the different measurements that are included in the analysis.

Measuring Innovation:

The dependent variable innovation uses a scale based on the innovation scale by (McMurray, Muenjohn and Scott, 2021) with minor adjustments made to the wording to ensure suitability for the Oxfordshire innovation ecosystem. The scale provides a comprehensive and reliable measurement tool of workplace innovation that businesses might apply to capture their innovative ability in order to drive business performance (McMurray, Muenjohn and Scott, 2021; Anderson, De Dreu and Nijstad, 2004).

Measuring Masculine Culture:

The independent variable culture is based on the masculine contest culture scale by (Glick, Berdahl and Alonso, 2018). The original scale with 20-items would have exceeded the duration of the survey, which is why an 8-item scale was applied that was proposed in the article. The scale is particularly interesting since it shows how strongly organisations endorse masculine norms, which makes it an important cultural scale in my own research focusing on a masculine dominated work environment (Glick, Berdahl and Alonso, 2018).

Measuring Career Satisfaction:

The independent and mediating variable career satisfaction builds scale by (Greenhaus, Parasuraman and Wormley, 1990).

Variable	Survey Question	Scale
Innovation	Please rate the statements on how you perceive the vision of your company on the scale below: ☐ My company's vision is made very clear to me ☐ The vision of my company helps me to st my goals ☐ Innovation in my company is linked to its business goals Please rate the statements on how you perceive your own role in innovation on the scale below: ☐ At work, I demonstrate originality ☐ My work requires me to make innovative decisions ☐ At work, I make time to pursue my own ideas or projects ☐ I am constantly thinking of new ideas to improve my workplace ☐ Among my colleagues, I am the first one to try new ideas and methods ☐ My manager and my colleagues perceive me as a creative problem solver ☐ I express myself frankly in meetings Please rate the statements on how you perceive your team on the scale below: ☐ We work in teams to solve complex problems ☐ Teams have the freedom to make decisions and act on them without needing to ask for permission ☐ People feel a strong sense of belonging and support ☐ My colleagues welcome uncertainty and unexpected circumstances related to our work Please rate the statement on how you perceive your manager on the scale below: ☐ My manager is my role model in creative thinking ☐ I discuss with my manager my career development ☐ My manager gives me opportunities to try new ways to solve problems ☐ My manager gives me useful feedback regarding my ideas ☐ My manager gives me an opportunity to learn from my mistakes Please rate the statements on how you perceive performance management and rewards in your workplace on the scale below: ☐ Performance management is related to my willingness to solve problems ☐ Creativity is rewarded ☐ Innovative ideas are rewarded	1-7
Masculine Culture	Please rate the statements on how you perceive the workplace environment on the scale below. In my workplace: ☐ Admitting you don't know the answer looks weak ☐ Expressing any emotions except anger or pride is seen as weak ☐ It is important to be in good physical shape ☐ People who are physically smaller have to work harder to get respect ☐ To succeed you can't let family interfere with work ☐ Taking days off is frowned upon ☐ You're either "in" or you're "out", and once you're out, you're out ☐ If you don't stand up for yourself people will step on you	1-7
Career satisfaction	Please rate the statements on your career progression satisfaction on the scale below ☐ I am satisfied with the success I have achieved in my career ☐ I am satisfied with the progress I have made towards meeting my overall career goals ☐ I am satisfied with the progress I made towards meeting my salary goals ☐ I am satisfied with the progress I have made towards meeting my goals for advancement ☐ I am satisfied with the progress I have made towards meeting my goal for the development of new skills	1-7

Figure 2: Measurement of variables: Innovation, Masculine Culture and Career Satisfaction

Results

Using random intercept model and MLwiN was used to test the hypotheses. In a first step the direct effect of the masculine culture on innovation was tested (H1), without including the mediating variable career satisfaction. The estimate of masculine culture on innovation was negative and significant (β : -0.278, $P < 0.01$); consequently, H1 was supported. Testing hypothesis 2 shows that the estimate of career satisfaction on innovation was positive and significant (β : 0.310, $P < 0.01$) hence hypothesis 2 could also be supported. To test hypothesis 3 the mediation analysis approach by Baron and Kenny (1986) was used. Including the mediating factor (career satisfaction) into the model reduces the effect of masculine culture

on innovation (β : -0.211, $P < 0.01$). According to Baron and Kenny career satisfaction, partially mediates the relationship between masculine culture and innovation with an effect of 0.067. Hence hypothesis 3 can also be supported. Please find results below in the figure.



Figure 3: Results of Analysis in a graphical display

Discussion

This research was conducted in the innovation ecosystem of Oxfordshire seeking to understand how the area can ensure long-term innovation by reducing their gendered barriers. Conducting research in a highly-innovative area such as Oxfordshire contributed to the field of organisational studies both from a contextual and conceptual perspective. Unlike previous research, which focused on single organisations or industries, this research considers a variety of organisations and industries that contribute to the innovation ecosystem. Consequently, this enables us to identify various inequalities relevant to a whole regional ecosystem beyond one organisation or industry (Cardador and Hill, 2018). Despite the small sample size, the composition of the sample still enables generalisability to for example other evolving and growing ecosystems in the UK, such as Cambridge. All three hypotheses were able to be confirmed in this research study. While the masculine culture that dominates in the companies embedded in the ecosystem of Oxfordshire negatively impacts the contribution to innovation. Career satisfaction has a positive impact on innovation. At the same time career satisfaction mediates the relationship between masculine culture and innovation. Drawing from the findings one recommendation for potential policies is to make career progression opportunities and decision-making processes in promotion decisions as transparent as possible to avoid the masculine culture tampering this and consequently impacting innovation. This research demonstrates by looking into masculine culture that organisations of the innovation ecosystem need to consider gendered culture and structures and practices hampering innovation (Nkomo and Rodriguez, 2019). While past research criticises the homogenous perception of women, women are not a homogenous group which is where the intersectionality approach by Acker comes into play which is central to understanding inequalities (Rodriguez *et al.*, 2016; Acker, 2006; Acker, 2012). This research considers educational background, age, and ethnic origin in organisations. Only focusing on one category inevitably oversimplifies inequalities, and the necessity of including other categories such as class, race/ethnicity, and other differences (Acker, 2006; Woods, Benschop and van den Brink, 2022; Crenshaw, 1989; Crenshaw, 2016). It is key to take intersectionality into account in policy making, even though the implementation remains challenging (Eveline, Bacchi and Binns, 2009; Verloo *et al.*, 2012). Furthermore, past research has criticized the use of a single-gender perspective, therefore, the sample in this paper includes both women and men (Orser, Riding and Stanley, 2012). Limitations comprise the sample size as well as the company data that was gathered through interviews, where numbers might not be as accurately displayed and susceptible to social desirability bias. Future research could

compare the innovation ecosystem to other innovation ecosystems around the world such as the Silicon Valley for example to draw wider conclusions.

Word count: 2805

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