Location Based Assignment

Minerva University

CS130: Statistical Modeling

Prof. A. Diamond

March 13, 2022

Decision Memo

To: Vishal Sharma, Strategy, Product & CRM | Group Management Cadre, Mahindra Group

From: Tetiana Bas, student at Minerva University

Subject: Decision Memo – Addressing the issue of gender inequality at the management level in Mahindra Group

Executive Summary:

I am writing to address the issue of gender inequality bias in your company's promotion metrics. After analyzing your data on gender distribution and key metrics considered for promotion, it is clear that the main factors you take into consideration are self assessment and management assessment. Promotion metrics are prone to gender bias, with men and women often evaluating themselves and being evaluated by managers based on different criteria and gender stereotypes (Morse, 2022). Based on the prior research, I hypothesize that male and female employees with similar scores on objective metrics will receive different scores on self and management evaluations, with men receiving higher scores which results in subjective evaluations being less efficient in promotion decisions. To test this hypothesis, I propose conducting a retrospective observational study that compares historical promotion data with objective metrics to determine if there is evidence of bias. The study will involve matching male and female employees who have similar scores on the defined objective metrics and comparing their evaluation scores. By using a rigorous scientific approach, we can analyze past promotion data and objective metrics to identify any gender-based disparities. Once we have a clear understanding of the extent of bias in the promotion process, we can take steps to address this issue and implement a fairer and more

equitable promotion mechanism.

Background information:

This company has a considerable gap between male and female employees in leadership positions. On the other hand, there seems to be a relatively balanced representation of both genders in lower-level positions. We also know that the company heavily relies on self and peer evaluation while making promotion decisions. The metrics used for promotion are subject to gender bias, as men and women tend to evaluate themselves using different criteria and are often evaluated differently by managers based on stereotypical beliefs about gender and technical abilities (Morse, 2022). Regarding the management evaluation, considering that the company is focused on technical areas, stereotypically women are considered to be less qualified than men which also impacts their evaluation by the managers. The might also be a place for an anchoring effect - once the manager sees high self evaluation they will be more likely to give a better feedback (Morse, 2022)[1]. The company wants to increase the female to male ratio in the management positions and know if the current promotion mechanism is effective for this. To address the issue of potential gender bias in promotion decisions, a rigorous approach is needed. To investigate the potential impact of gender bias on promotion decisions, we will conduct a retrospective observational study. This study will enable us to determine if there is evidence of bias in the promotion process, and based on the results, we can develop strategies to improve the promotion mechanism

[1] **#biasisidentification**: I identified 2 potential bias risks in the way the company assesses their employees. The first one is based on the difference of bars for men and women when it comes to self evaluation and the second one is the gender bias that might negatively affect women in a technical field.

Study design:

The proposed hypothesis is that cultural and gender norms result in disparate self-evaluation scores, with males tending to rate themselves higher than females. This study aims to examine the efficacy of self-evaluation and managerial evaluations of employees, considering the potential for gender bias.

The population of interest would be employees from an organization who have undergone performance appraisals in the past and have shared self-evaluations and were evaluated by their managers as a part of their performance assessment.

A random sample of employees from the organization can be selected to ensure that the sample is representative of the population.

Data can be collected retrospectively by analyzing the self evaluations as well as management evaluations of employees and comparing them to the following objective metrics:

Performance metrics, including code quality, productivity (the number of lines of code written, number of bugs fixed, or number of features implemented),

innovation (new products developed, or new features added to existing products),

Customer satisfaction (analysis of customer feedback, ratings, and reviews),

professional development (the number of training courses taken, certifications earned, or professional associations joined)

We will divide the sample into 2 groups based on their gender. After that we will perform statistical matching based on the objective metrics defined above. This means that we will select a study unit from the female group (because we have less females in the company overall) and find the unit in the male group that will be as close as possible to the female unit based on the

objective metrics. We will repeat the following process for each female unit. Next step will be comparing self evaluation results and managerial evaluation results for the matched pairs of employees. We will calculate the p-value for the comparison groups[2].

Data analysis:

We will perform a significance analysis of the obtained data. We will calculate the p-values of the obtained results and compare it to the standard of 0.05. If the obtained p-value is less than 0.05 it would mean that there is less than 5% chance of obtaining the result given that the null hypothesis is false. This will serve as strong evidence in support of the null hypothesis[3]. To minimize interpretation bias, we will use blinding techniques during the analysis. This means that the analysts will not know which evaluation score belongs to a male or a female employee. The use of statistical analysis and blinding techniques will allow us to draw robust conclusions about the presence or absence of gender bias in promotion decisions[4].

Conclusion:

To address the issue of gender inequality in the higher level of management in the company we recommend conducting a retrospective observational study to understand if self evaluation in managerial evaluation is indeed effective for measuring one's performance and making decisions

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[2] **#observationalstudy**: I designed retrospective observational study. I identified the target population, the sampling technique, main comparison variables, comparison groups. I explained the study design and the interpretation of the results.

[3] **#significance:** I used a significance test in the suggested study. I defined the p-value and explained wta it will mean in the context of the study and how it is connected to the hypothesis identified.

[4] **#biasismitigation**: I used this HC by including the recommendation of blinding people who would perform data analysis to ensure the bias free interpretation of the results

about the promotion. We will perform matching and compare the subjective reported results to the objective metrics developed. We will determine if men tend to get a higher evaluation than equally qualified women by comparing the p-value to 0.05.

If you have any questions or concerns, please do not hesitate to reach out to me. Thank you for considering my recommendation.

Sincerely,

Tetiana Bas, student of Minerva University

Word Count: 988 words

Questions asked during the interview:

1. Tell me more about your job and about the role of your company in the industry
2. What is the general gender distribution in the company
3. What is the proportion of females at the management level? What about the higher management (C-level)?
4. How do you decide who to promote?
5. What is the role of self evaluations and managerial evaluation?
6. What are the current steps the company is taking to promote gender diversity?
7. What do you think is the main obstacle to having an equal gender distribution at the top management levels?

Figure 1: Meeting with Vishal Sharma and his wife Sagel Sharma.

References

Morse, G. (2022, December 13). *Designing a Bias-Free Organization*. Harvard Business Review. https://hbr.org/2016/07/designing-a-bias-free-organization