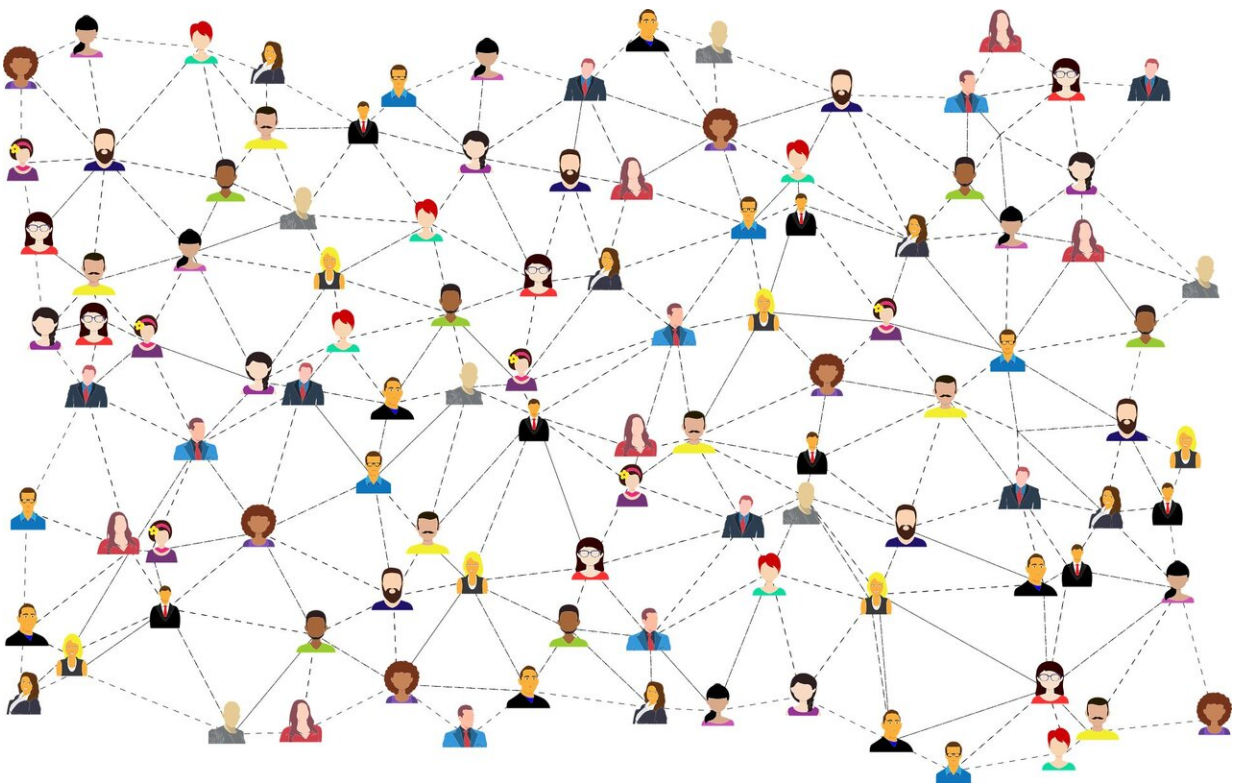


# AI can mitigate bias against women in loan decisions and boost lenders' profits and reputations

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Recent research from the University of Bath shows discrimination against women worsens if Artificial Intelligence (AI) is used by lenders for loans, but that ethical lenders could choose to tweak the AI

algorithms to address this bias and still improve their profits as well as their brand reputation.

The study of the role of salesforce commissions on loan decisions made at car dealerships in Canada highlighted that using AI raised lenders' profits significantly and did not intensify existing biases against customer groups who have been traditionally marginalized by society—with the glaring exception of women.

"We found that lenders could boost profits by applying machine-learning techniques to thousands of car loans. However, this [profit](#) comes with a considerable downside: AI can make car loan deals disproportionately less favorable for women, exacerbating [social injustice](#) in the system," said Dr. Christopher Amaral of the University's School of Management.

The research showed that lenders employing AI to optimize salesforce commissions could boost annual profits by up to 8% but that came at an increased cost to women. However, researchers identified that the bias against women could be mitigated by tweaking the AI algorithms behind the sales commissions and still result in a profit increase of up to 4%.

The researchers programmed the machine learning algorithm to maximize profits while constraining it to ensure women were not further disadvantaged. They found that organizations could still lift their profits by sourcing them from the non-marginalized group—men.

"This underscores the positive impact AI can have on [social welfare](#) while at the same time benefiting firms both with immediate bottom-line lifts and long-term reputational benefits due to equitable, socially responsible behavior," said Dr. Amaral, author of the [study](#) in *Production and Operations Management*, titled "Optimizing Pricing Delegation to External Sales Forces via Commissions: An Empirical Investigation."

Dr. Amaral said the bias against women in this sector was well documented, with recent research showing salespeople negotiate [less favorable loan terms for women](#) than men. Some research suggests that this outcome could be due to salespeople assuming that women are less capable of assessing whether loan terms are fair due to having less knowledge than men about specific types of products, such as car [loans](#), but also due to [women not being as assertive](#) as men.

"To alleviate injustice and avoid action by regulators, it may appear that the prudent approach is for firms to steer clear of AI altogether—but that sacrifices the boost in profits possible with AI tools. We would argue there is a middle way—that AI can be used more responsibly to balance the trade-off between profits and [social justice](#)," Dr. Amaral said.

"There is no doubt that AI, used unthinkingly, can worsen discrimination against [women](#). But, if used responsibly, AI isn't the threat that society often portrays it to be. Instead of limiting the use of AI, we should encourage firms to use it responsibly, ensuring it benefits both their business goals and social equity," Dr. Amaral said.

**More information:** Christopher Amaral et al, Optimizing Pricing Delegation to External Sales Forces via Commissions: An Empirical Investigation, *Production and Operations Management* (2024). [DOI: 10.1177/10591478241259791](#)

Provided by University of Bath

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