Sowing Facts, Reaping Trust: The Role of Agricultural Education in Combating Climate Change Misinformation

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Introduction

Social media platforms have become increasingly influential in agricultural discussions, especially within the fields of agricultural extension and communication (Aguilar-Gallegos et al., 2022). Studies show that farmers actively use these platforms to exchange knowledge about farming practices and emerging technologies (Dilleen et al., 2023). Through social media, they can share experiences, explore innovative techniques, and engage with peers, technology providers, and experts. Moreover, the ability to share multimedia content—such as videos demonstrating agricultural practices—further enriches learning and knowledge dissemination (Cano et al., 2024). Climate change is one of the greatest environmental and social challenges of the 21st century, with profound impacts on ecosystems, food security, and sustainable development. The way this phenomenon is represented on social media plays a decisive role in shaping public perceptions, beliefs, and behaviors (Lewandowsky & Van der, 2021; Pennycook & Rand, 2021). Platforms such as Instagram, YouTube, Twitter/X, and messaging apps both facilitate the rapid spread of scientific awareness and serve as channels for the dissemination of misinformation about climate change. Such misinformation can create doubt about scientific findings and reduce public trust in knowledge-based institutions, ultimately undermining participation in environmental actions and evidence-based decision-making, especially in the agricultural sector (Pennycook & Rand, 2021; Roozenbeek & van der Linden, 2019). This highlights the urgent need for proactive correction of misinformation. Active correction on social media can weaken the reproduction cycle of false information and strengthen trust in scientific sources and evidence-based decisions (Freiling & Matthes, 2023). This is particularly relevant among agricultural experts, who play a central role in communicating climate knowledge to farmers, policymakers, and professional networks (Walter & Tukachinsky, 2020; Freiling & Matthes, 2023). Therefore, understanding the factors shaping their willingness to correct misinformation is crucial for enhancing effective climate communication and extension policies.

Conceptual Framework

To explain this willingness, the Health Belief Model (HBM) is used as the theoretical framework. This model explains preventive or protective behaviors based on individuals' perceptions of risk, benefits, barriers, and self-efficacy. Generally, experts who perceive higher risks and feel more capable of correcting misinformation are expected to show greater corrective behavior (Champion & Skinner, 2008). Additionally, moral norms and personal values such as universalism can strengthen moral motivation and responsibility to counter misinformation (Dong et al., 2024).

Purpose and Research Objectives

Accordingly, this study aims to identify the factors influencing agricultural experts' willingness to correct climate change misinformation on social media platforms, including Instagram, YouTube, Twitter/X, and various messaging apps. By focusing on extension agents and agricultural experts through the lens of the HBM, this research seeks to bridge existing gaps and provide a practical theoretical framework to enhance corrective behaviors against climate misinformation.

Methodology

This study employed a cross-sectional design. The statistical population consisted of agricultural experts and extension agents in Khokeloeh Province, Iran. he interviewees included 137 men and 63 women. The participants' mean age was 44.13 years with a standard deviation of 7.65 years. Their ages ranged from 22 to 61 years, indicating considerable age diversity among respondents. In terms of education level, the majority held a bachelor's degree (59%), followed by associate degrees (34%), and master's degrees or higher (7%).

Results

After validating the measurement model, the structural model was tested to examine relationships among constructs and assess predictive power. Results showed that perceived severity, self-efficacy, and moral norms have a significant positive effect on the willingness to correct climate misinformation, while perceived barriers have a significant negative effect. However, perceived susceptibility, perceived benefits, and cues to action showed no significant influence. Universalism values positively affected perceived severity, perceived benefits, and self-efficacy, and negatively affected perceived barriers. The model explained 75% of the variance in experts' willingness to correct misinformation and substantial variance in other constructs (71% for perceived severity, 65% for perceived benefits, 62% for barriers, and 55% for self-efficacy). Among all factors, universalism, moral norms, perceived barriers, self-efficacy, and perceived severity had the strongest effects on willingness to correct misinformation.

Conclusions & Implications

The findings highlight that moral and value-based motivations, particularly universalism, play a critical role in shaping agricultural experts' corrective actions against climate misinformation. While cognitive factors like self-efficacy and perceived severity strengthen this tendency, perceived barriers remain a key obstacle. This suggests that empowering experts with digital communication skills and moral encouragement can enhance corrective engagement on social media. The non-significant role of perceived benefits and cues to action indicates that internal moral drivers may outweigh external incentives. Overall, reinforcing universalist values and reducing perceived barriers appear essential to fostering proactive correction of climate misinformation among agricultural professionals.

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