

## Review Manipulation In Immigrant Businesses: Evidence From A Qualitative Study

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### Abstract

*Immigrating to a different country presents a unique set of challenges such as cultural assimilation and learning a new language. Immigrant businesses are generally family-owned and therefore cannot invest heavily in cybersecurity. Such businesses are often victims of review fraud attacks where their profiles are bombarded with fake, negative reviews, damaging their reputation. What are the mental models of immigrant business owners around review manipulation? How do they discover it, and what are the consequences they have to face? What steps do they take to mitigate this, and how effective are they? We seek to answer these research questions through qualitative interviews with  $N = 24$  immigrant business owners in the United States. We discover that these small businesses face review bombing attacks on various platforms like Google, Yelp, Facebook and even food delivery applications like DoorDash. Many are unaware of review bombing as an attack vector and fail to understand the phenomenon. We also find that most businesses lack the ability to handle the attacks, and reporting such reviews to the platform is not an effective method to have them removed. Based on our findings, we present a set of recommendations for platforms and policy makers to combat review manipulation and minimize its impact.*

### 1. Introduction

Immigrating to a new country brings with it a myriad of challenges, from cultural assimilation to the acquisition of a new language. For many, the pursuit of the American dream includes establishing family-owned businesses, contributing to the rich tapestry of immigrant entrepreneurship in spite of having limited resources. In this milieu, the vulnerability of these enterprises extends into the digital realm (Guberek et al, 2018), where the looming threat of review fraud attacks jeopardizes the hard-earned reputation of immigrant-owned businesses. At the intersection of immigration and entrepreneurship lies a pressing issue—cybersecurity for small, family-owned businesses. The inability to invest heavily in cybersecurity measures makes these ventures susceptible to malicious activities, particularly in the form of review fraud. Oftentimes, malicious competitors try to bring down genuine businesses by attacking them with negative reviews. The assailants deploy deceptive tactics, bombarding online profiles of immigrant businesses with fake, negative reviews that can have far-reaching consequences.

The impact of fake reviews on small businesses is well-known. However, little is known about the prevalence and impact of fake reviews on immigrant businesses, where owners face several additional unique challenges as compared to non-immigrant business owners. We aim to bridge this gap through this study.

Our research endeavors to shine a light on the mental models of immigrant business owners as they navigate the treacherous terrain of review manipulation. Through qualitative interviews with a diverse cohort of  $N = 24$  immigrant business owners in the United States, we aim to unravel their perceptions, experiences, and coping mechanisms in the face of review fraud attacks. We seek answers to the following research questions:

- RQ1: What are the various forms of review manipulation faced by immigrant businesses?
- RQ2: How do immigrant business owners discover review manipulation, and what are the consequences they have to face as a result?
- RQ3: What are the steps immigrant businesses take to mitigate review manipulation, and how effective are they?

In this study, we make the following contributions:

- We are the first to explore the impact of purposeful review manipulation on low-resource immigrant businesses, and discover three forms of review manipulation: fake reviews, doctored images and review bombing.
- We discover mental models regarding review manipulation, the prevalence on various platforms and ways in which it is discovered.
- We find that immigrant business owners are often helpless against review manipulation attacks, as reporting through official channels does not always work. Some individuals also resort to reputation repair services which are borderline illegal, and may engage in identity theft and ToS violations.
- We present a set of recommendations for platforms and policy makers that can help combat review manipulation.

We hope that our study sheds light on the problem of review manipulation experienced by immigrant businesses, identifies key challenges, and recommends potential measures for prevention and mitigation.

## **2.Literature Review**

Review fraud poses significant challenges for businesses across various sectors (Ghose & Ipeirotis, 2011). The impact of review fraud on small businesses is multifaceted, encompassing damage to reputation, loss of customer trust, and potential financial repercussions. Unscrupulous actors engage in tactics such as posting fake negative reviews, manipulating review content, or orchestrating review bombing campaigns, all aimed at tarnishing the business's image. Studies have shown that a single negative review can deter potential customers, and when coupled with fraudulent activities, the consequences can be severe (Smith & Brown, 2019). Small enterprises, particularly those operated by immigrants, face heightened vulnerabilities due to resource constraints (Smith et al., 2020). Immigrant-owned businesses, often family-operated, encounter unique challenges in the face of deceptive online practices (Martin & Murphy, 2017).

The mental models of business owners play a pivotal role in shaping their responses to review manipulation (Jones & Lee, 2018). Research has explored the psychological impact of negative

reviews on businesses, emphasizing the importance of understanding the cognitive processes underlying owner responses (Smith & Brown, 2019).

Studies on user-generated content and online reputation management contribute to the understanding of mechanisms for discovering review fraud (Chen et al., 2021). Existing research on mitigation strategies for review fraud primarily focuses on general best practices applicable to businesses across sectors (Gao & Zhang, 2017). Immigrant-owned businesses, operating within unique socio-economic contexts, require tailored approaches for effective mitigation (Papadopoulou & Kanellis, 2018). Cultural dimensions play a significant role in shaping the mental models of immigrant business owners when confronted with review manipulation. Research has indicated that cultural factors, such as individualism-collectivism and power distance, influence how individuals perceive and respond to online feedback (Kim & Lee, 2009).

As we synthesize the existing literature, it becomes evident that while significant progress has been made in understanding review fraud and its impact, there is a notable gap in research specific to immigrant-owned businesses. Our study aims to contribute to this evolving discourse by providing a nuanced exploration of the challenges, mental models, discovery mechanisms, and mitigation strategies within the context of immigrant entrepreneurship and review manipulation.

### **3. Methodology**

#### **3.1. Participant Recruitment & Demographic**

Our target participants are small business owners who have experienced review manipulation. The recruitment process involved targeted outreach through social media, business associations, and personal contacts. In order to qualify for the study, participants had to meet the following criteria:

1. Be at least 21 years of age.
2. Have immigrated to the United States in the past 3 years.
3. Be a small business owner.
4. Be able to understand and converse reasonably in English.
5. Have experienced review manipulation at least once.

Overall, we selected  $N = 24$  individuals meeting these criteria, out of which 17 identified as Male (70.83%), and the rest as Female. Our participants came from a diverse group of countries: 8 from Mexico, 6 from Pakistan, 4 from Bangladesh, 3 from Honduras, 2 from Vietnam and 1 from Syria. Most businesses (20) were food businesses (restaurants or cottage industry) and the remaining 4 were cosmetic and wellness businesses (salons and massage parlors).

#### **3.2 Study Design**

Our study instrument was a qualitative interview. Most questions were open-ended, and participants were encouraged to be as descriptive as possible. Every interview consisted of the following major segments (complete set of questions is in Table 1):

1. Introduction: At the beginning of the survey, we introduced ourselves and the purpose of the study. Participants were asked for consent, and were informed about their rights to decline answering any questions or discontinue participation.
2. Demographics: We asked participants questions about their age, gender identity, income, race and business.
3. Experiences of Review Fraud: In this section, we asked questions about mental models of review manipulation, the prevalence of fake reviews, ways in which review fraud manifests and discovery methods.
4. Mitigation Measures: In this section, we asked participants about their experience with handling review manipulation, the steps they took, and the effectiveness of those steps.
5. Conclusion: In this last section, we asked participants if there was any additional information that they wanted to share. We then thanked them for their time and concluded the study.

Interview Segment	Questions
Demographics	<ol style="list-style-type: none"> <li>1. How old are you?</li> <li>2. What gender do you identify as?</li> <li>3. What is your country of origin?</li> <li>4. What is your occupation?</li> <li>5. What is your annual income?</li> <li>6. What is your highest level of education?</li> </ol>
Experiences of Review Fraud	<ol style="list-style-type: none"> <li>1. Have you ever experienced a fake review for your business?</li> <li>2. How do you know that a review is fake?</li> <li>3. On which platform do you see fake reviews?</li> <li>4. Can you describe any examples of fake reviews you had?</li> <li>5. How did you become aware of fake reviews for your business?</li> </ol>
Post Review Fraud	<ol style="list-style-type: none"> <li>1. What were some consequences you experienced because of fake reviews?</li> <li>2. How do you handle review fraud?</li> <li>3. What happens when you report these reviews to platforms?</li> </ol>

Table 1: Interview Questions. Note that as this is a qualitative study, every interview was unique and more tailored questions may have been added based on participant responses.

### 3.3 Ethical Considerations

We took every effort to ensure minimal risk of harm to participants. We followed the guidelines laid down in the Menlo Report (Bailey et al, 2012), and treated participants with respect. All participants were provided with detailed information about the study's objectives, and informed consent was obtained from those willing to share their experiences. All data is reported only through anonymized identifiers (P1 - P24) and no PII is revealed. To protect privacy, interview recordings were deleted after the analysis was complete. Participants had the right to decline answering any questions, or withdraw from the study at any time.

### 3.4 Analysis

Most of the responses we received were open-ended, and we used inductive coding (Williams & Moser, 2019) inspired by grounded theory (Holton, 2007), which involves the identification and development of themes, patterns, or categories directly from the raw data without relying on pre-existing theories or predetermined coding structures. Interview transcripts were read one by one and codes were identified using open coding. After every five transcripts, we went back and re-coded all the previous transcripts to account for newly developed codes. Overall, we identified codes in three major themes: forms of review manipulation, discovery of review manipulation and mitigating review manipulation. We present our findings in the next section.

## 4. Findings

### 4.1 Forms of Review Manipulation

**Fake Reviews:** These are the most vanilla form of review manipulation. Fake reviews are a deceptive tactic where individuals intentionally post misleading negative reviews on platforms. These fake reviews often contain false information about the quality of services or products offered by businesses, creating a misleading perception among potential customers. All of the participants reported having experienced fake reviews at least once. As P7 recalls:

"Discovering a false review claiming our service was terrible was shocking. I knew it was false because the story the review described was completely made-up; it never happened. It's disheartening to see how some individuals resort to dishonest tactics to harm us."

**Doctored Images:** Manipulated images accompany negative reviews and involve altering photos to amplify the impact of criticism and portray their businesses in a negative light. This form of review fraud not only harms the business's reputation but also creates a false narrative through misleading visual representations. 13 participants reported having experienced image manipulation in reviews. Participant P22 tells us:

"Our restaurant's photo was manipulated to make it look unclean. The negative review that followed was based on this (false) image...."

Another strategy, as identified by 5 participants, is the creation of fake screenshots to present a false narrative of a conversation between the customer and the business. Participant P2 recounts:

"....a review with a screenshot of a chat between the customer and us. The chat showed that the customer made an inquiry, and we responded in a very rude manner and even used expletives. But this did not happen – I can show you on my phone that I never even received such a text....."

Some participants believe that this is a highly effective form of manipulation; much more effective than simple fake reviews, because it contains images which customers perceive to be much more reliable than a review without images. As P13 says:

"A photo – now that makes it much more believable. If a review claimed that the food at a restaurant was spoiled, I would be very likely to believe it if there was a picture that showed the spoiled food....."

**Review Bombing:** Another recurring theme emerged regarding the occurrence of coordinated negative reviews, akin to what is colloquially known as "review bombing". Review bombing refers to a coordinated and often malicious effort by a group of individuals to post a large

number of negative reviews or ratings for a product, service, business, or other entities on online platforms. The goal of review bombing is typically to damage the reputation and overall rating of the target, often as a form of protest, retaliation, or to manipulate public perception. This tactic is commonly employed on various online review platforms such as Google Maps, Yelp, Amazon, or social media platforms. 10 participants shared vivid accounts of observing sudden and targeted influxes of negative feedback on their online profiles, often without any prior warning. Participants detailed the sudden and orchestrated nature of these attacks, illustrating a concerted effort by external actors to inundate their online profiles with a surge of detrimental feedback. P3 articulated:

"It was like a coordinated campaign. Our reviews, which were mostly positive, were suddenly flooded with negative comments, all appearing almost simultaneously. Overnight, our rating dropped from 4.8 to under 3..."

The coordinated timing and thematic consistency of these negative reviews were recurrent themes, with participants expressing astonishment at the seemingly synchronized nature of the attacks. Moreover, participants described the impact of these coordinated negative reviews on their businesses, emphasizing the disruption to operations, loss of customer trust, and financial ramifications. P11 emphasized:

"The reviews were so similar, it was obvious they were planned. It wasn't organic dissatisfaction; it was a deliberate attempt to bring us down."

## 4.2 Experiencing Review Manipulation

**Platforms of Review Manipulation:** Participants provided insights into the diverse array of platforms where they observed review manipulation impacting their businesses. Participants identified Google Maps (14), Facebook pages (9), and DoorDash (8) as primary arenas susceptible to orchestrated negative reviews. Google Maps is important to businesses because that is how people would search for services nearby, and also look up the address of a particular business. P5 reflected:

"It's disheartening to see our Google Maps profile bombarded with fake negative reviews. We work hard to maintain our reputation, and it's frustrating when it's attacked in such a public way – anyone searching for nail spa centers will see these reviews, as will anyone who wants to navigate to us."

This sentiment resonated across participants who emphasized the significance of Google Maps as a critical platform for customer engagement and trust. A notable emphasis was placed on DoorDash, where participants expressed concerns about the unique challenges posed by this food delivery application. Many restaurants who do not have the resources for doorstep delivery rely on apps like DoorDash. P19 remarked,

"DoorDash is tricky. People can submit ratings without even ordering from us. Fake ratings impact our overall score, and that affects our ranking in search results. It's a loophole that can harm small businesses."

**Discovering Review Manipulation:** Participants described the ways in which they became aware of reputation manipulation, unraveling a narrative of realization and subsequent responses to orchestrated negative reviews. Two prominent sources of awareness emerged from their experiences. First, a discernible drop in orders through food delivery applications like DoorDash was a warning sign, as reported by 12 participants. In the words of P9:

"The first sign was a sudden decline in DoorDash orders. It was perplexing because our loyal customers suddenly seemed to vanish from the app."

This sentiment was echoed by P14, who emphasized –

"We heavily rely on DoorDash for orders, so when the volume plummeted unexpectedly, we knew something was amiss."

In addition to the digital realm, 5 participants highlighted the significance of in-person interactions with their regular customers as a crucial source of awareness. P6 shared:

"Our regulars started asking about the negative reviews they saw online. It was alarming because they knew us and our service, so the reviews felt off."

This direct feedback from loyal patrons served as a tangible indicator of reputation manipulation, prompting participants to investigate further. P18 expressed the interconnectedness of online and offline awareness, stating:

"The online reviews didn't match the conversations we had with our regulars. It was like there were two different narratives, and that misalignment made us question the authenticity of the negative feedback."

### **4.3 Mitigating Review Manipulation**

Navigating the challenges posed by fake reviews, participants detailed their mitigation strategies, revealing a complex landscape where reporting to platforms and engaging reputation-fixing services stand out as prominent yet uncertain measures.

**Reporting to Platforms:** The initial and most common step participants took was reporting fake reviews to the respective platforms. However, according to 16 participants, this process was long and oftentimes fruitless. P8 expressed the frustrations associated with this process, stating:

"We reported the fake reviews to Google and Facebook, but the response was agonizingly slow. It's like shouting into the void, hoping someone will listen.....in any case, we are losing [money and customers] every moment that the review is live....."

Despite reporting, 7 participants highlighted the inherent challenge in proving a review's fraudulent nature. P14 shared:

"Proving a review is fake is like finding a needle in a haystack. The platforms require evidence, but how do you prove that a negative review is intentionally misleading? I do not want to report too many reviews either or they will feel that I am just trying to get rid of the negative reviews....."

This finding underscores the dangers of review fraud; as reviews appear to be genuine and written by customers, detecting the inauthentic ones is a challenging problem.

**Reputation Fixing Services:** A subset of participants (6) turned to reputation-fixing services that claim to remove fake reviews for a fee. These services claim that they can repair your reputation by removing negative reviews from multiple platforms like Google Maps, Yelp and TripAdvisor. P21 admitted–

"We were desperate, so we tried a reputation-fixing service. They charge you, but there's no guarantee it will work. It's a gamble, and for small businesses, it's a tough call. I found the service on Fiverr, they claim that they can get the negative reviews removed from my Google Maps listing. I am not even sure it is legit...."

Engaging reputation-fixing services, while tempting for businesses desperate to mitigate the impact of fake reviews, introduces a set of inherent dangers and risks. 2 participants reported that they had to hand over login information about their listing – this points towards the services being fraudulent and simply a front for stealing credentials. This opens up businesses to other risks, including account compromise and significant financial damage. Additionally, such services may also engage in unethical practices such as false or mass reporting, unauthorized access, etc. Platforms may construe this as violating the rms of service and suppressing consumer opinion, and penalize businesses as a result

## 5. Recommendations

In light of the challenges faced by small immigrant-owned businesses due to the detrimental effects of orchestrated negative reviews, this section puts forth a set of strategic recommendations aimed at mitigating the harm caused by review manipulation. Drawing insights from the preceding discussions on the experiences of participants, the focus is on proactive measures that online review platforms, businesses, and legislators can adopt to fortify the resilience of immigrant enterprises against malicious campaigns.

**Enhanced Bot Detection:** In order to counter the proliferation of orchestrated negative reviews generated by automated bots, online review platforms should invest in state-of-the-art bot detection mechanisms. Leveraging advanced machine learning algorithms (Efthimion et al, 2021), these systems can analyze user behavior, linguistic patterns, and engagement metrics to discern patterns indicative of bot-generated content. By scrutinizing factors such as the frequency, timing, and language consistency of reviews, platforms can distinguish between authentic user contributions and orchestrated attacks. For instance, sophisticated algorithms can identify unusually high review volumes from a single source or detect repetitive language patterns indicative of automated campaigns, preventing the spread of fake reviews. Such technological enhancements serve to bolster the credibility of online reviews, creating a more trustworthy environment for businesses and customers alike.

**Improved Reporting Mechanisms:** To empower businesses in swiftly addressing orchestrated negative reviews, online platforms must revamp and optimize their reporting mechanisms. A user-friendly reporting interface, coupled with clear instructions and streamlined communication channels tailored specifically for review fraud, can expedite the process of reporting and resolving fake reviews. Platforms should introduce a tiered reporting system, prioritizing businesses facing severe reputation attacks to ensure their concerns receive prompt attention. By establishing a responsive reporting framework, platforms can not only facilitate timely interventions but also demonstrate a commitment to supporting businesses in navigating the challenges posed by review manipulation.



**Legislative Measures:** Governments play a crucial role in addressing the challenges posed by orchestrated negative reviews through the enactment of legislation specifically targeting misleading practices. Legal frameworks should define and penalize individuals or entities found guilty of orchestrating review manipulation campaigns. By categorizing such actions as deceptive trade practices, legislators can establish clear guidelines and consequences for those engaging in fake review campaigns. The introduction of laws tailored to combat misleading reviews serves as a potent deterrent, dissuading malicious actors from undertaking orchestrated attacks on small immigrant-owned businesses. Simultaneously, it provides affected businesses with legal avenues for recourse, reinforcing the commitment to a fair and trustworthy online business environment. Through legislative measures, governments can contribute significantly to reducing the prevalence and impact of orchestrated negative reviews, creating a more secure digital landscape for small immigrant-owned enterprises.

**Stakeholder Collaborations:** Partnerships between legislative bodies and review platforms can enhance the effectiveness of combating review fraud through shared resources, data, and expertise. Government agencies can work closely with online platforms to share information related to patterns of review fraud, emerging trends, and identified malicious actors. Platforms can, in turn, provide anonymized data that may aid government agencies in conducting comprehensive analyses of review manipulation at a larger scale. Establishing joint task forces composed of representatives from government agencies and online platforms can help to combat review fraud effectively. Regular meetings, workshops, and collaborative initiatives can enhance the synergy between the public and private sectors in addressing the complexities of online review manipulation.

**Education & Awareness:** Educational campaigns for businesses can be an important step in eradicating review fraud. These campaigns can raise awareness about the impact of review fraud, educate businesses on how to identify fake reviews, recognize the attack vector, and appropriate mitigation strategies. The campaign can extend to the development of educational resources, such as guides and tutorials, to empower users to navigate online reviews more effectively.

## **6. Conclusion**

Oftentimes, malicious businesses attempt to defame competitors by damaging their reputation online through fake reviews. Because of limited resources and cultural challenges, immigrant-owned businesses often face review manipulation attacks. In this paper, we focused on the experiences of review manipulation from the perspective of immigrant businesses. Through qualitative interviews, we discover that immigrant businesses (mostly restaurants and wellness firms) face fake reviews on Google Maps, Facebook and DoorDash. Some also are victims of review bombing (where several accounts, either coordinated humans or bots, flood a profile with negative reviews). We also find that reporting such reviews through the official channels is a long and slow process, and this causes some businesses to turn to fringe and borderline illegal reputation fixing services. Based on our findings, we recommend that enhanced bot detection, collaborations between government and private sectors, and improved reporting mechanisms can help combat the effect of review manipulation.

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