

Detecting and Mitigating Flaming in Online Platforms Against Women: A Step Towards Women Empowerment

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ABSTRACT

The rise of information and communication technologies and social media platforms has provided unprecedented opportunities for women to thrive as entrepreneurs and participate in the public sphere. However, this has also led to increasing online abuse and harassment against women. A study was conducted to examine the psychological health status of the female population affected by online flaming behavior. A quantitative analysis was conducted on 202 female respondents in Chennai, focusing on their perceptions and experiences as victims or non-victims of this online flaming. The study found that technology adoption, such as machine learning, can help identify perpetrators, identify solutions, and formulate prevention measures to safeguard and enhance women's status in society. The study suggests that digital social media platforms contribute to recovery from abuses through early detection and can mitigate campaigns to end online violence against women. The study aids policymakers in creating appropriate policies and regulations to address cyber abuse against women.

Keywords: Entrepreneurs; Flaming; Harassment; Online abuse; Social media platforms; Technology; Women empowerment

1. Introduction

The new internet medium turned out to be a significant communication tool in

the digitalized media era as a strong foundation for free and better interaction. There are several positive impacts of the internet on the psychological path parameters

of an individual. However, adverse consequences of the polarity of online user comments [1] have become a social issue since malicious comments, including groundless abuse, mockery, vicious personal attacks, defamation and threats, insults, and slander, were the global issues. These result in chronic psychological effects encompassing depression, anxiety, and even suicidal thoughts among young adults and adolescents [2]. In India, a total of 58 00,000 cognizable crimes were recorded, encompassing both special local laws and the Indian penal code crimes [3]. The phenomena occurring within cyberspace were characterized by invisibility and anonymity. Any user could anonymously join the online social platform community without revealing their identity as defined and exposed in the physical world. The guaranteed anonymity motivates people to participate equally regardless of gender, age, and social status. This sort of gender bias also impacts women's mental health, and society exhibits more interest in the criticism part of any personal matters [4].

Furthermore, online violence is prevalent against women and it is a universal phenomenon. This concern has developed over time as the usage of online digital tools and social media sites are increased [5]. On the other hand, the usage of social media platforms twirls out as increasingly significant for entrepreneurial marketing. This is an efficient strategy for gaining psychological empowerment through women's entrepreneurship. Female entrepreneurs' participation in social media has witnessed a growing trend. Research by Biswal and Chakraborty aims to study the effects of participation in social media on female entrepreneurs' intention of digital entrepreneurship and its psychological empowerment[6].

One could not entirely understand the social psychology of social media [7]. Moreover, few empirical researchers have attempted to construct a theoretical framework that describes the association among individual users of the internet, flaming behavior, self-concepts, or the moderating impacts of the polarity of online comments. Another study focuses on exploring how this self-concept is related to the behavior of online flaming to represent if the polarity of online user comments (e.g., negative or positive) thrives as a mediating variable. In contrast, self-concept shows the effect on online flaming. Hence, effective measures to eradicate this online flaming, enhance the psychological mindset, and empower women with their voices must be initiated. The previous research relies upon examining the gender abuse in (CMC) computer-mediated communication that remained patchy, with another journalist often filling a vacuum. There is a lack of researchers to investigate this phenomenon of gendered, sexualized violence, prevailing online using social media platforms, continued in straddling various disciplines. The mental health of a woman, if it is stable and undisturbed, can move forward to achieve her milestones. This kind of sustainable mental health specifically commences by offering psychologically healthy well-being awareness and knowledge to the young generation.

As a consequence of this, this could improve psychological well-being and reduce the perception of disgrace and bias. The role of digital transformation, social media platforms, and empowerment was supposed to assist in enhancing the effects of socio-economic mental health determinants. Hence the research to point effective primitives in determining and mitigating ways of online flaming or roasting of the

digital platform is essential to uplift the psychological mindset and empower women.

1.1 Background of study

Despite many debates by scholarly researchers, hate speech online and hostility have proved tedious to define. When the disruptive or vitriolic discourse on the internet was not coded as either cyberbullying or racist hate speech impacting young people and children. The scholars referred to this as "trolling" or "flaming". Both the terms were contested and had high elastic descriptors [8]. For instance, from the mild end of this spectrum, a male on any online dating website may be persuaded to transmit more messages to women despite being ignored or explicitly informed that she is not interested. In this scenario, incitement towards suicide is common, particularly if the target is known to face trouble from other mental health problems of women. Threats were also made routinely against the partners, colleagues, family members, pets, friends, and online supporters of women. On this ground, Lumsden and Harmer reviewed research of hate, discrimination, and harassment on the web, comprising of instances of trolling, flaming, racism, Islamophobia, and misogyny [9] and the approaches wherein the feminists, activists, and political organizations had resisted those toxic online discourses and online behaviour [10].

1.2 Challenges

The recent scholarly interest in misogyny on social media platforms and the digital era, however, is directed towards the emergence of categories of other concepts for abuse online, harassment, and gendered hostility. This may also consist of "technology violence" [11], "gender trolling" [12], "technology-facilitated sexual violence," and "republishing" against

girls. In this perspective, the "gendered cyberhate" term is utilized in referring to different phenomena that occur at the gender-technology violence nexus. This is due to the adverse effects on the female population in terms of societal and personal issues.

1.3 Problem statement

The gendered violence and online flaming [13] in online platforms has become increasingly harmful, toxic, and prevalent. Contrary to other claims by different types of commentators in a wide range of contexts, this cyberhate seems to be most innocuous(as "just the internet," "just words," etc.) [14]. The growing count of academic researchers into this issue of online flaming against women deliberates that this widespread trouble caused to be embodied, tangible, and real. The coercive force of this gendered cyberhate and online roasting against the women population was determined as causing many female populations significant reputational, political, economic, psychological, and social harms. This aspect could be implied to constitute a new structure of workstation harassment, word abuse online, and also emerging existing economic dimension, gender-related digital divides.

The motivations that underpin the decision to engage in online "flaming" were subjected to a different interpretation from multiple distinct academic disciplines. One such review by Namkee, Hoc hung, and Sohn reveals that this poses a significant difference in nature and tone on online abuses against women across 15 years. This expansion and diversity in the usage of digital social media platforms examined by Web 2.00 were perceived abuse rise exponentially. While this sort of roasting behavior and abuse behavior traversed from

discrete online to more generalized verbal violence, targeting the occupational life or personal life of individuals. Further to this, there occurs evidence that this "flaming," now generally expressed as "online abuse," turned to increasingly vituperative. Founta addressed these issues consisting of threats to women on online platforms and misogynistic condemnation in his research [15].

1.4 Motivation of study

There lies a hope that increased usage of online platforms could advance the equality of women with the internet "hailed as a place wherein abuse and offline prejudices would be destroyed and negated" [16]. While it becomes true that social networking websites had offered campaigning groups and feminist groups an efficient platform, from which in developing the aims [17], arrived at the cost of online abuse or flaming. When the effects of abusive acts on women are considered in the public sphere, there is peculiar evidence that the incessant deluge of flaming causes women to withdraw from the sector or public arena [18].

Through online social networks and online platforms, many adults (women) and teenagers suffer from flaming behaviour and cyberbullying. Almost fifty percent of youth in the United States have admitted to being bullied [17]. However, most of the women victims generally hide their victimization because of certain reasons. Adolescents and teenagers fear that technology-utilized smart devices or their sites might be conquered away from their own. The adults were embarrassed to acknowledge being bullied or undergoing online flaming by someone, for the victim's fear prevails that the opponent, family member, or peers may get misunderstood. In this scenario, the proper identification and reporting of

flaming and cyberbullying seem more significant in identifying victims and to persuade in taking certain actions in favor of them. By this approach, one can save the women population and safeguard the entire society from online abuse hazards is causing.

1.5 Paper organization

Section I presents the introductory section of the study. Section II represents the assessment and outcomes of different literature related to the research idea. Section III describes the research method. Section IV elucidates the results. Sections V and VI enumerate further discussion and conclusive statements.

2. Review of Literature

The forthcoming section enunciates different literature about the prevalence of flaming behavior in social media platforms, its root causes, prevention strategies, technology adoption in society in its mitigation, and how it impacts the women population.

2.1 Flaming behaviour in the online platform

Flaming is referred to as an outburst of emotional behavior or rude behavior by a particular user in a computing environment [11]. Flaming is defined as a concept inclusive of negative and antisocial behaviors ranging from to becoming angry to exposing strong emotions like hostility [12]. Another side, the flaming phenomena encompass a broader variety of social media behavior online consisting of the usage of coarse language, spreading of false information, message boards plastered with sexual harassment and malicious comments, personal attacks, online word-of-mouth abuse, and slander. This flaming behavior within cyberspace negatively affects continued cyberspace existence and

its sound growth. Hence there arise persistent calls to investigate the flaming causes and inhibitors in social spheres and personal spheres [19,20].

Nonetheless, academic approaches to understanding flaming behavior in different disciplines has hence far focussed wholly upon the circumstantial attributes. One such research by Lee and Jin focused on discovering how the self-concept factors comprising self-monitoring and self-identity were related to the behavior of flaming [21]. The research demonstrated if the online comment polarity played a prominent moderating variable position and deliberated how this behavior impacts product purchases and corporate brands. This, in turn, paves the hurdle in empowerment also [22].

Much of the cyber hate that the women population receives at the workstation may be harassment and abuse that contravenes policies and laws in different nations and different international conventions, labor treaties, and recommendations. Harassment and hate speech on online platforms seem to affect the ability of women to determine and sustain their jobs and market their personal brand's products and their business cores. The flaming and abusive behavior also affects the tendency of women to network professionally and socially [23].

The abuse, threats, online flaming, and harassment at the most sustained and extreme end of the spectrum, cause women debilitating trauma and fear and profound disruption in life. Gendered cyber hate and flaming targets deliberate emotional responses that range from anxiety, isolation, unsafeness, sadness, and vulnerability to violation, terror, shock, pain, and distress. Some researchers reported that crucial health issues, including panic at-

tacks, depression, anxiety disorders, agoraphobia, and other conditions, may result in self-harm and may cause psychological breakdowns after being attacked online [24]. Hence appropriate methods for this violent online behavior must be put forth.

2.2 Root causes of flaming behavior against women by society

The root causes of online flaming within the virtual space were explained through theories of (CMC) computer-mediated communication. This sort of CMC is exhibited to correlate with uninhibited user behaviors [13]. Following the theorists of CMC, politeness and offline social norms were ignored online because of the nature of the digital medium, marked by a lack of social cues. This could be exchanged in face-to-face contact, leading to online flaming. The digital dimensional approach of gender-based abuse or violence possesses a crucial effect on girls' and women's lives in terms of safety, psychological and physical health, family ties, reputation, dignity, and livelihood. This seems emblematic of long-lasting issues of structural violence, discrimination against women population, and inequality in gender against women population being anchored within society. This depicts the demonstration of wide present trends that undermine development in gender equality enhancement and the entire protection rights of women.

Another potential approach in which gender-based online flaming or violence seems to reflect bias in the offline world is the present gender imbalance in the digital world and online social media [25]. Since social media technology is imbalanced in gender (gender biased), this gets translated potentially to social media platform structure that inherently maximizes the risks to-

wards women in terms of online flaming or roasting and criticism as well.

Social media website Twitter is specifically popular, used for follower interaction, indulging for the promotion of recent projects, and yielding instant feedback on their activities. But still, this sort of accessibility depicts a double-edged sword, as any sort of activity or quality of any user could constitute a focused target for those insults, leading to users acquiring considerable abuse individually. The next level of debate is central in the literature study on online hostility concerns if flaming is the result of social contexts or digital communication technologies. The foremost position with regards to negative behavior is an effect of lacking social cues and digital environment restraints wherein the absence and anonymity of non-verbal cues, tone, and body language are thought to elicit unrestrained and asocial behavior.

Shafie and Ismail stated that social networking sites and social media, such as Tumblr, Instagram, and Facebook, were very popular among students recently. Hence, the majority of social-media users were youngsters [26]. The participants were exposed to digital technologies for a long period [27]. Since 2014, the count of users using Twitter, particularly in Malaysia, has increased from 11.10% to 12.90%. Twitter is another social networking service and microblogging in which the user posts and interacts with different messages, referred to as tweets. This platform functions as one medium for netizens to express their feelings. Certain people express their thoughts and feelings through writing or "tweeting" on their status. Flaming words might be utilized for this abuse purpose as well. From the perception of linguistics, flaming behavior stands as one of the speech act components. In research by

Bansal, data study persuaded obtained from the compilation process of status on Twitter that are crawled based on some keywords. This utterance was determined as flaming and categorized into wide categories indirect flaming and intentional or direct flaming. Hence the data has been classified into twelve types as well. The flaming terms are directed to attack someone, to offend through comments, postings, emails, or statements with intense language, hostile or swear words, trolling, insults, etc.,. The utterance can be due to vengeance or verbal conflict through improper usage of social media and digital platforms. The mode of interaction may turn to abuse against women. The identification of such cyberbullying was performed on the presented data in various Online social network (OSN) profiles. Many researchers classify the content(harmful) into non-bullying and bullying categories. Machine-learning (ML) methods were employed in the prediction and categorization of this informal content and flaming words. To employ this concept, the main requirement is the proper dataset for training purposes and testing machines.

Tweets were obtained consisting of both non-bullying and bullying words fetched out from API and R studio, a balanced dataset. Those tweets were treated after the data cleaning and pre-processing phase. A manual labeling method performed as negative and positive based upon sentiments. The bag-of-words technique, having a unigram feature extraction phase, is applied to extract an essential set of significant features. Then through frequency reduction of feature performed. Decision trees, CART, logistic regression, and Random forests were utilized to predict cyberbullying.

Another research by Azumeh uti-

lized a supervised learning ML approach to detect this harassment and online abuse against women specifically [28]. The ML approach sentiment, contextual, and content features of the document in training the SVM classifier for online post corpus. The research by Shah contributes to the use of Artificial intelligence (AI) as a service (AIaaS) to prevent immoral content spread. As Software as service(SaaS) and (IaaS) Infrastructure as service, to determine the immoral content detection in online social media platforms and for eradication, ML also uses efficient models of cloud-computing in leveraging the service [29].

2.3 Responsibility of social media Platforms in women empowerment

On the other hand, the spread of digital platforms websites, and social media paved growth and immense transformation to the lives and economic status of the women population. Golzard explored how the internet created new innovative opportunities for women in Iran and Tehran. The outcomes of this analysis delineated that work in online mode and internet usage exhibited significant effects on the economic livelihood of Tehrani girls through engaging them in new online business streams. Technology adoption is been used to attract more clients in online advertising through digital marketing strategies for establishing and extending more business contacts with peers and in managing households positively. The research highlighted that because of the lack of women's proficiency in computer skills, women were not able to maximize their participation in the economic sphere of online media platforms [30]. The barrier should be eliminated through enhancing (ICT) information, communication and technologies, and computer literacy of the women popula-

tion. This transforms the women to establish progressing networking program institutions for skills training on the internet.

Nowadays, feminist activists have begun staging solidarity campaigns on different social media platforms, such as WeChat and Weibo. Young Chinese women have more knowledge and awareness regarding the issues of technology and its negative sides, like misuse of data and theft, compared to an earlier generation. They are not reluctant to speak about and defend it.

Under some circumstances, protest activities such as the #MeToo global movement offer prominent opportunities to proclaim the arguments for women activists and let women's voices get heard. With such background, Lin attempted to explore how the Chinese women population was empowered and how their participation in the #MeToo movement [31].

Women's empowerment and improving their confidence through minimizing the dependency on family members and ensuring their own 'say', particularly in the family decision, would direct to the high societal and family status [32]. Besides this, it also led to political empowerment and economic empowerment of women since it deals highly with the public while executing their own business. ICT, in this context, plays a primary role as a better enabler by enhancing service quality dramatically while minimizing the costs of operation, hence ensuring better market competitiveness. Social media platforms for women lay a potential foundation that efficiently challenges the present scientist stereotypes, fostering science communication diversity and opening up new approaches to become visible. Huber, in his research, explored the potential by assessing fifty female scholars' TikTok accounts. The content analysis results imply that those female scien-

tists from the broader level of disciplines and at various stages of careers were visible upon TikTok. Building past researchers indicated that some female scholars utilize TikTok majorly to explain concepts and scientific facts and to organize a discussion about the role of female scholars perceives like. Moreover, the female scholars deliberate about their life events, provide expert advice, and showcase the role of technology in figuring out their empowerment in business as well [33].

The diversified delivery channels like Electronic CRM(eCRM),(eWOM) electronic word of mouth, and social media advancement stipulated extensive ICT usage for product marketing and empowerment globally. Within India, the policy of "Digital India" at the national level and the thrust on integrating ICT over the nation is enunciated. Then particularly in Kerala state, government policies. Education and opportunities for women make a defined transformation in the state towards a "Knowledge Economy" as (KKEM) Kerala Knowledge Economy-Mission was launched and functioning already in this state [32]. Often, civil society organizations (CSOs) strive to play an indispensable role in floating the self-help group(SHG), which nurtures the women population and assists in their empowerment. For instance, the Kumdumshree (GOK)government of Kerala [34] project is another classical example worldwide, as per the research by Manoj and Ali [35].

2.4 Research gaps

Women played a significant role in all streams of work, but also the media coverage and their discussion about women during the epidemic were conspicuously absent [36]. Following research, 75.70% of the study respondents believed

that self-media platform discussion might cause stereotypes for worsening the understanding of feminism. Nearly 64 percent of the respondents thought the lack of coverage to become outstanding women entrepreneurs stopped the public people from being noted the capability of women [36]. Many women need to opt between workplace and family in all circumstances, undoubtedly raising the women's pressure on both premises being the decision maker to the family. The women achieve and are highlighted as iconic through the spread of media platforms, however, the hindrance to blocking this pathway is the online flaming and harassment of women. They carry more responsibility as a decision maker for families, take care of families, shine as competitive, empowered people in society, to possess a balanced work-life [37].

The study has regarded the nuanced psychological and social impacts of online flaming on women, which was ignored by most of the existing studies. Therefore, the women population tends to pursue their rights and continue to sustain themselves as independent individuals by voicing their opinions and thriving as high-positioned leads while preventing these issues in online social media platforms. This could be accomplished by space in digital platforms by raising the voice and nurturing the culture programs for society.

3. Research Methodology

3.1 Research design

This research is dependent on descriptive and empirical studies. The data collection has been accompanied by primary data inclusive of all the quantitative analysis outcomes gained through the SPSS software package. The data were gathered from different women who may be working, self-employed, and entrepreneurs.

Table 1. Summary of existing works.

References	Aim	Method	Results
[15]	It has been examined the nature and extent of abuse towards women	It has investigated 12,436 tweets	Gendered and racist abuse, benevolent othering, questioning intelligence and position, silencing and dismissal
[14]	It has scrutinized the effect of online harassment on female journalist	It has interviewed 75 female journalists	The harassment disturbs the regular practice of journalism
[19]	It has analyzed the impact of uncivil online comments on aggressive behavior, emotions, and cognitions.	It was developed on one factorial among subjects design	It has revealed that exposure to uncivil comments can lead to augmented hostile cognitions.
[26]	It has examined the social networking sites' contribution to English informal learning among university students.	Quantitative study	The respondents have learned English by saving interesting quotes and images on social media sites.

The primary data accompanied nearly 202 respondents from different sectors, homemakers, working, self-employed, and social entrepreneurs. The approach is determined to explore the psychological effects of the women population due to flaming behavior in society using online digital platforms, the role of digitalization, prevention, mitigation ways, and its association with empowerment.

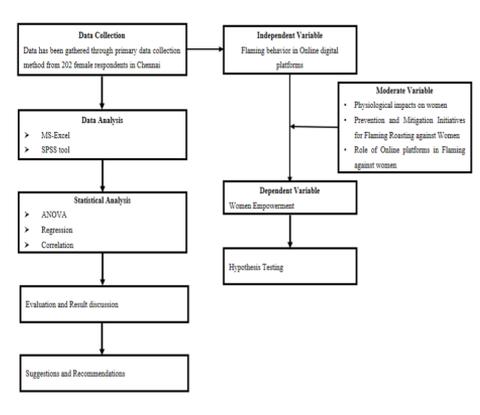


Fig. 1. Research Framework.

In the initial stages of the research design, the variables that contributed to the variations in women’s empowerment were identified. The influencing factors of flaming behavior or roasting caused to women in society through this technology adoption were determined and elucidated as moderating variables. The women undergoing

this flaming behavior were subjected to certain psychological changes in their mindset. This poses a disturbance in the capability or the opportunities provided to women to succeed in life and society. Through survey assessment, questions associated with all these key concepts were gathered and perceptions of this online flaming were also deliberated using the Likert scale and text options. The association of this perception, prevention measures, and psychological changes due to this online abuse through flaming were all explicated using empirical study. The research by design is quantitative and exploratory as it seeks to uncover the underlying causes that affect professional development, personal growth, and psychological mindset. The positive and negative effects of online platforms also mold the platform or hindrance of women from thriving as successful entrepreneurs.

3.2 Data collection strategy

Data collection includes collecting, determining, and evaluating accurate interpretations for the research utilizing high-standard authenticated methods. This research has used primary data for evaluation. The data collection process is the most important stage of research concerning the emphasis on the research objectives to gain a logical understanding of the research questions in aligning with research variables.

The main responsibility of a researcher is to choose the appropriate data collection method. Data collection was conducted through survey assessment using a semi-structured questionnaire, as it is flexible and offers detailed responses. It effectively captures the diverse outlooks and opinions of respondents.

3.3 Sampling technique and sample size

Choosing the repliers for the study includes the methods that are generally referred to as sampling methods. The method adopted in this research for selecting the repliers is the Purposive sampling method. This kind of method is one of the techniques used in other research in the field that follows research objectives, like which group of participants is appropriate to explicate their opinion concerning research objectives. By applying the purposive sampling technique, the researcher's knowledge will get enhanced in selecting the target audience without any diversity. The data collected from the selected participants is performed through the purposive sampling technique.

The present study utilizes the purposive sampling method in the primary data sources. This is a non-probability sampling approach in which the researcher decides who must be incorporated or obtained as the sample based on unique characteristics like capability or expertise in the specific research topic and willingness to be involved in the research [38]. The process of selecting the respondents, who, are expected to produce proper and beneficial information for the research study, is known as purposive sampling. The process of recognizing and choosing cases utilizing available resources efficiently is known as purposive sampling. In this research, samples under this purposive sampling approach,

the respondent population, specifically the women population consisting of working people, entrepreneurs, homemakers, and self-employed women, were chosen to undertake this survey assessment. The main reason for embracing a purposive sampling strategy in the present study is because it is constructed on the statement concerning the objectives and aims of the research that specific types of people may embrace significant views regarding the research questions and hence is required to be integrated into the sample [39]. It possesses a set of principles that offers reliable data.

3.3.1 Sample size

By choosing this purposive sampling strategy, the total data gathered from the selected participants is 202. After collecting the data, it is fed as different variables and assessed through the tool called SPSS to accomplish the research aim. Thus, the valuable respondents for the survey were 202, which were filtered using purposive sampling methods for their perceptions regarding online flaming behavior, causes, prevention, mitigation ways, the role of online platforms, and their psychological effects due to this behavior.

3.4 Research objectives

- To identify the gender-biased flaming behavior of individuals on online social media platforms
- To analyze the association of psychological impacts upon women and prevention remedies taken by women against a harsh speech by society in an online platform that promotes and contributes to women's empowerment
- To suggest and recommend solutions to eliminate flaming behavior in social platforms, especially against

women, and to pave the way for women's empowerment

3.5 Research hypothesis

- H10: The prevalence of online flaming behavior in digital platforms has no significant impact on the psychological status of the women population.
- H11: The prevalence of online flaming behavior on digital platforms significantly impacts the psychological status of women.
- H20: There is no gender-biased flaming behavior in society, resulting in no significant differences in the occurrence of flaming behavior in men and women.
- H21: There is no gender-biased flaming behavior in the society, paving any significant differences in the occurrence of flaming behavior in men and women population
- H31: There prevails gender-biased flaming behavior in society, paving to significant differences in the occurrence of flaming behavior in men and women population
- H30: There prevails gender-biased flaming behavior in society, paving to no significant differences in the occurrence of flaming behavior in men and women population
- H40: The prevention measures, detection, and mitigation methods of online flaming/abuse do not have an associative impact on the empowerment opportunities for women
- H41: The prevention measures, detection, and mitigation methods of on-

line flaming/abuse have an associative impact on the empowerment opportunities for women.

3.6 Research instrument

The research instrument has been denoted as a tool utilized to measure, analyze and collect data based on the proposed research interests. The tools have been most frequently utilized in education, social sciences, and health sciences to examine students, clients, and patients. The proposed research has used a semi-structured questionnaire retrieved from primary data sources. This tool of semi-structured questionnaires with closed-ended questions has a fixed level of responses to every question.

3.7 Data analysis

Quantitative research analysis [40] is determined as a systematic phenomenon by collecting data and executing mathematical, statistical, and computational methods. The quantitative method fetches data from conventional and prospective customer/clients utilizing sampling techniques and providing online research, polls, surveys, etc. The results are determined in numerical terms. After careful interpretation, these numerals are used to predict or evaluate the future of the research and make the necessary changes.

With the support of a framed questionnaire, the data are collected from the particular sample respondents, and quantitative methodology is utilized for the data analysis. The data will be recorded using an Excel sheet to reveal the variables. The software tool SPSS is used for the subsequent estimation stage to analyze the variables entered in Microsoft Excel. The outcomes are estimated using five evaluation approaches. The statistical assessment is explicated through exploratory data analysis, regression test, correlation test, de-

scriptive statistics, One-way ANOVA analysis, and independent T-sample test. Correlation is applied to describe the association between the two variables. Regression is implemented to represent the influence of a single variable upon other variables. ANOVA is a statistical tool used to find the difference between the means of two independent collections by analysts. Descriptive statistics denotes the representation, collection, and formation of data. It is employed for briefing the characteristics of data sets. Frequency distributions are defined as the visual displays which form frequency counts, and this helps the information be concluded simply.

Based on the study's results, implications are performed, and further enhancement is suggested for implementing the research in the future. The use of SPSS software in this research makes the results effective and consistent in counting the values. The collected data was enumerated using Excel and SPSS software. Correlation, Regression, and ANOVA are accomplished to evaluate the organized hypothesis. The data estimation comprises 3 levels, namely,

- Microsoft Excel is used to incline the demographic variables, and the design of frequency distribution is done.
- To list the data analyzed by statistics to predict the median range and the mean and standard deviation of several variables in this research is a significant step. Hence SPSS software is employed in this research.
- Regression, Independent T-Sample test, ANOVA, and Correlation evaluation are employed to evaluate the research hypothesis.

3.8 Ethical considerations

Certain ethics will be followed while conducting the research analysis. As the study is based on the individual perceptions of women regarding online flaming behavior, causes, prevention, mitigation ways, the role of online platforms, and their psychological effects it poses, the research deals with highly confidentiality-based responses. The following ethics are followed:

- Before the researcher's survey assessment, information is passed to the respondents in the prior stage.
- The respondents are not forced by any means to give their responses. Only willing respondents are selected for the survey analysis.
- Only the responses to the questionnaire are asked of the respondents, their private reports or data are not forced to be exposed by them.
- Since the research study uses only original data for data analysis, it contains no false data.
- All the data organized and gathered would be kept highly confidential.

These are the ethical considerations used by the researcher for the research analysis, which is accurate to their knowledge based upon this research study.

4. Results and Discussions

4.1 One-way ANOVA

The first section of the data analysis explicates the statistical test performed on the responses gained from the customer preference perspective. The One-way ANOVA test is explored to examine if the different levels or the variations of independent factors possess a measurable impact on the dependent variable.

Independent variable: Prevalence of gender-biased towards roasting women on social media platforms

Table 2 enumerates the One-way Anova result among the independent variables of the occurrence of frequent gender-biased approaches in online flaming in social media platforms to impact the dependent variables. The significance value of the test seems to be 0.017, 0.050, and 0.003 (lesser than p -value), indicating that the dependent variables' capability of women entrepreneurs to minimize the online flaming in social media, the effectiveness of this flaming to affect the mental status of women negatively and the scope of awareness programs in institutions to decrease the spread of flaming behavior have dependency entire spread and prevalence online flaming against women. These dependent parameters rely on the psychological and mental status of women, the empowerment of women, and the awareness programs in educational institutions rely on online flaming hazards occurring on social media platforms. These parameter programs aid in the prevention of flaming occurrence as well.

4.2 Bi-variate correlation test

The significance values of 0.000, 0.029, and 0.002, with a lesser than a p -value of 0.05, indicated that there lies the perfect association between the opinion of respondents in the psychological mindset, mitigation complaints against this online flaming and the role of social media platforms to peruse action against this online flaming against women population. The outcomes of the test indicated that mitigation actions are done and the role of social media platforms associated with having a change in psychological variations in women leading to getting empowered.

4.3 Partial correlation test

Partial correlation is defined as the measure of strength and the direction of linear relationships among the continuous variables while having control for the impact of other continuous variables (referred to as control variable or co-variate). The partial correlation test in Table 3 has a significant value of 0.001 and 0.000 less than 0.05, implying strength and direction of linear relationship among those mentioned above variables by control variables. The significance value of the test indicates that variables of the effectiveness of online flaming occurring to have an impact on the mental health of women and this psychological status of women to pave changes in women empowerment were associated by having controlling impact by the role of online platforms against this flaming eradication and prevention measure as the citizen to raise voice in the platform of social media to fight against this flaming and to have societal changes. This indicates the relationship between the role of social media platforms in mitigating this online abuse and the prevention measures as women entrepreneurs to raise their voices in society to remove the hindrance this flaming/ cyber hate to boom considerable changes in the psychological health of women, to get empowered.

4.4 Regression test

The R square value in Table 5 indicates the 78.5% probability predictor variable that has a relationship with the opinion of the dependent variable.

Table 6 enumerates the ANOVA test for the regression test. The significance value of 0.023 in the ANOVA test exposes the prevalence of a relationship between the predictor and dependent variable. Table 5 elucidates the regression test to assess the degree of probability that the pre-

Table 2. ANOVA.

		Sum of Squares	df	Mean Square	F	Sig.
Women empowerment can reduce flaming behavior on online platforms?	Between Groups	6.834	2	3.417	4.184	0.017
	Within Groups	162.517	199	0.817		
	Total	169.351	201			
Does the effectiveness of flaming behavior on an online platform negatively affect your mental well-being?	Between Groups	4.751	2	2.375	2.867	0.05
	Within Groups	164.853	199	0.828		
	Total	169.604	201			
Awareness programs conducted in schools and public places can reduce the flaming act of society against women?	Between Groups	1.668	2	0.834	0.994	0.003
	Within Groups	166.912	199	0.839		
	Total	168.579	201			

Table 3. Correlations.

		Psychological mindset affects your upliftment status of achievement in society to get empowered.	Complaints regarding the flaming act done by individuals against you?	Do social media platforms take any action regarding the flaming behavior done by society against you?
Psychological mindset affects your upliftment status of achievement in society to get empowered.	Pearson Correlation	1	.213**	0.074
	Sig. (2-tailed)		0.002	0.029
	N	202	202	202
Complaints regarding the flaming act done by individuals against you?	Pearson Correlation	.213**	1	.250**
	Sig. (2-tailed)	0.002		0
	N	202	202	202
Social media platforms take any action regarding the flaming behavior done by society against you?	Pearson Correlation	0.074	.250**	1
	Sig. (2-tailed)	0.029	0	
	N	202	202	202

** . Correlation is significant at the 0.01 level (2-tailed).

dictor variable impacts the dependent variable. The outcomes deliberate the prevalence of relationship among the predictor variable healthy psychological mindset of the women population to have an uplift in the society and hindrance of women to thrive as women empowered person with opportunities within work-station to have an impact with the dependent variable competence of empowered women to better handle the roasting behavior within online platforms.

The significance value in the regression test brings out 0.000, 002, and .007, lesser than the value, hence this proves the prevalence of a positive relationship between the opinion of the hindrance of flaming abuse against women, psychological status of those women and the capability of empowered women to tackle this sort of on-

line abuse issues. Hence this health psychological status and flaming behavior both get the probability to predict the women empowerment opportunity to handle this online flaming issue.

4.5 Independent T-Sample test

Table 8 describes the group statistics of an independent t-sample with a high mean value for variable prevention actions persuaded through social media for eradicating online flaming according to its societal changes and effectiveness. The output reveals that the women population with the opinion of this prevention measure to mitigate this online flaming in social media platforms was highly impacted to have mean differences by different target population entrepreneur and normal women population.

Table 4. Partial Correlations.

Control Variables		Social media platforms take any action regarding the flaming behavior done by society against you?	Rate your preventive actions, like raising your voice on social media platforms against the flaming act done by society in terms of effectiveness and change in society.
Does the effectiveness of flaming behavior on online platforms negatively affect your mental well-being?	Social media platforms take any action regarding the flaming behavior done by society against you?	Correlation	1
		Significance (2-tailed)	0.001
	Rate your preventive actions taken by you, like raising your voice on social media platforms against the flaming act done by society in terms of effectiveness and change in society?	df	0
Does your psychological mindset affect your upliftment status of achievement in society to get empowered?	Social media platforms take any action regarding the flaming behavior done by society against you?	Correlation	0.25
		Significance (2-tailed)	0
	Rate your preventive actions taken by you, like raising your voice on social media platforms against the flaming act done by society in terms of effectiveness and change in society?	df	198
			0.25
			0
			198
			0

Table 5. Model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.886a	.785	.776	236.178

a. Predictors: (Constant), Psychological mindset affect your upliftment status of achievement in the society to get empowered? Flaming is a hindrance to women empowerment in terms of providing opportunities in work place?

The significance value for this independent T-sample test was deliberated in Table 8, and it shows that the significance values are all lesser than 0.05, $p < 0.05$. these outcomes exposed the mean variances of the determinant of psychological impacts of women to get uplifted, preventive actions initiated by women by raising their voice against this flaming through social media platforms and flexibility or role of social media platforms allowing women population with freedom speech from the opinion of women entrepreneurs seem to be statistically different from the mean variances of the same psychological impacts of women, preventive actions against flaming and flexibility or role of social media platforms. The significant mean variances of these opinions that prevention ac-

tions towards flaming and contribution of social media platforms to have impacts on the psychological status of the women to get uplifted as a women entrepreneur differs among women entrepreneur and normal women population

The conventional research [41] has examined the attitude towards online violence for detecting current state of issue and potential for preventing the concerns. The results have detected that raising awareness is an essential factor in reducing online violence. Though it has offered significant outcomes, it has disregarded the aspect of violence against women. The prevailing study [42] has investigated the dynamics of online harassment against women on twitter in India. The outcomes have stated that gendered sexual harassment and, ethno-religious slurs and dismissive insults are few types of violence undergone by women. Although, the study lacks in quantitative assessment. The proposed study overcomes these pitfalls and provides a quantitative evaluation for reducing flaming on social media against women.

Table 6. ANOVA^a.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.669	2	0.835	4.829	.009b
1 Residual	34.395	199	0.173		
Total	36.064	201			

a. Dependent Variable: Empowered women are better at handling the roasting behavior of society in the online platform than the other women?

b. Predictors: (Constant), Psychological mindset affect your upliftment status of achievement in the society to get empowered? Flaming is a hindrance to women empowerment in terms of providing opportunities in work place?

Table 7. Coefficients.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.072	0.09		11.941	0
Flaming is a hindrance to women empowerment in terms of providing opportunities in work place?	0.115	0.038	0.221	3.067	0.002
1 Psychological mindset affects your upliftment status of achievement in the society to get empowered?	-0.013	0.033	-0.027	-0.378	0.007

a. Dependent Variable: Empowered women are good at handling the roasting behavior of society in the online platform than the other women?

Table 8. Group Statistics.

	Are you a women entrepreneur?	N	Mean	Std. Deviation	Std. Error Mean
Does a psychological mindset affect your upliftment status of achievement in society to get empowered?	Yes	59	2.22	0.911	0.119
	No	143	2.4	0.92	0.077
Rate your preventive actions taken by you, like raising your voice on social media platforms against the flaming act done by society in terms of effectiveness and change in society.	Yes	59	2.47	1.006	0.131
	No	143	2.76	1.05	0.088
The social media platform is encouraging women with respect to freedom to talk?	Yes	59	1.8	0.805	0.105
	No	143	1.63	0.719	0.06

5. Conclusion

The research investigated how the psychological health of women gets impacted by such gender-biased online flaming in society through this quantitative study. The role of social media platforms to recommend solutions and advancement in technology to mitigate and prevent this sort

of online harassment paves a progressing path for women entrepreneurs and uplifts societal perception. The research has undertaken crucial steps toward addressing the significant concern of gender-biased online flaming and its effect on women’s empowerment. The study has offered valuable insights and practical solutions to create safer

Table 9. Independent samples test.

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Does a psychological mindset affect your upliftment status of achievement in society to get empowered?	Equal variances assumed	0.287	0.593	-1.255	200	0.021	-0.178	0.142	-0.458	0.102
	Equal variances are not assumed.			-1.261						
Rate your preventive actions taken by you, like raising your voice on social media platforms against the flaming act done by society in terms of effectiveness and change in society?	Equal variances assumed	0.036	0.85	-1.749	200	0.008	-0.281	0.16	-0.597	0.036
	Equal variances are not assumed.			-1.78						
The social media platform is really encouraging women with respect to freedom to talk?	Equal variances assumed	1.299	0.256	1.451	200	0.001	0.167	0.115	-0.06	0.394
	Equal variances are not assumed.			1.385						

and more inclusive digital environment for women.

The empirical findings revealed the statistically significant association between psychological impacts on women, from societal flaming behavior, prevention initiatives, and mitigation remedies by raising voice and actions inhibited through the role of social media platforms. Similarly, the opinion of the upliftment status of women empowerment relying on psychological mindset and the contribution of online platforms against flaming by societal transformation differs among women-entrepreneur and normal women. The flaming as a hindrance to women’s development and empowerment and their impacts in the psychological mindset seem to exhibit association with others, having an impact with one another.

Similarly, complaints recorded to fight against this flaming behavior were associated with the contribution of social media platforms to mitigate this flaming behavior through appropriate actions to the offenders. The current study is limited within social media platforms and investigated only flaming against women. The

study, however, can be directed to explicate both qualitative and expert opinions along with quantitative inferences about the perception of flaming behavior, their impacts, mitigation, and prevention ways for a better transformation within the society. The solution of privacy in data, nurturing better perception towards women, understanding their value and the mitigation approach, and how to safeguard their social media accounts using awareness of new innovative technology can be insisted on as well.

6. Future Recommendations

A suggestion indulging in formulating a new type of criminal offense to the individuals, posing this online flaming against women, must be robust and implemented at the spot of the event. Provisions ought to be made in levying fines for recognized offenses. Civil remedies may also be utilized in forms consisting of litigation and protection orders against those offenders and class action laws against the platform operators and software designers who maintain this unsafe environment that lays the opportunity for flaming. The technology designers, with their advancement

to detect and mitigate this sort of online flaming, must also be encouraged to implement measures inclusive of a permanent ban on disposable/instant and anonymous accounts, creating this flaming content that seeks attention from the audience through their harmful negative comments. Another suggestion could be the expansion of cyber safety programs for women in educational institutions like colleges and schools to include a great focus on cyber ethics, cyber civility, and morality on social media platforms and to cultivate good culture to treat feminism as well. The most multifaceted response towards gendered cyber-hate success can be achieved with a concomitant shift in inequitable treatment of girls and women in wide culture being nurtured in society.

References

- [1] S. Frenda, B. Ghanem, M. Montes-y-Gomez, and P. Rosso, Online hate speech against women: Automatic identification of misogyny and sexism on twitter, *Journal of Intelligent & Fuzzy Systems*, 2019;36:4743-52.
- [2] M. Kulkarni, S. Durve, and B. Jia, Cyberbully and Online Harassment: Issues Associated with Digital Wellbeing, arXiv preprint arXiv:2404.18989, 2024.
- [3] NCRB, National Crime Records Bureau (NCRB), 2023.
- [4] V. K. Singh, M. Chayko, R. Inamdar, and D. Floegel, Female librarians and male computer programmers? Gender bias in occupational images on digital media platforms, *Journal of the Association for Information Science and Technology*, 2020;71:1281-94.
- [5] O. Jurasz, Online violence against women: A Four Nations study, 2024.
- [6] U. Chakraborty and S. K. Biswal, Impact of social media participation on female entrepreneurs towards their digital entrepreneurship intention and psychological empowerment, *Journal of Research in Marketing and Entrepreneurship*, 2023.
- [7] B. Schivinski, M. Brzozowska-Wos, E. Stansbury, J. Satel, C. Montag, and H. M. Pontes, Exploring the role of social media use motives, psychological well-being, self-esteem, and affect in problematic social media use, *Frontiers in Psychology*, 2020;11:617140.
- [8] E. A. Jane, Online abuse and harassment, *The international encyclopedia of gender, media, and communication*, vol. 116, 2020.
- [9] K. Barker and O. Jurasz, Online misogyny, *Journal of International Affairs*, 2019;72: 95-114.
- [10] E. Harmer and K. Lumsden, Online othering: An introduction, *Online othering: Exploring digital violence and discrimination on the web*, pp. 1-33, 2019.
- [11] J. Ostini and S. Hopkins, Online harassment is a form of violence, *The Conversation*, 2015;8:1-4.
- [12] K. Mantilla, Gendertrolling: How misogyny went viral: How misogyny went viral: ABC-CLIO, 2015.
- [13] I. V. Andersen, Hostility online: Flaming, trolling, and the public debate, *First Monday*, 2021.
- [14] G. M. Chen, P. Pain, V. Y. Chen, M. Mekelburg, N. Springer, and F. Troger, You really have to have a thick skin: A cross-cultural perspective on how online harassment influences female journalists, *Journalism*, 2020;21:877-95.
- [15] R. Southern and E. Harmer, Othering political women: Online misogyny, racism and ableism towards women in public life, *Online othering: Exploring digital violence and discrimination on the web*, 2019:187-210.

- [16] B. Poland, *Haters: Harassment, abuse, and violence online*: U of Nebraska Press, 2016.
- [17] S. Banet-Weiser, *Postfeminism and popular feminism*, *Feminist Media Histories*, 2018;4:152-6.
- [18] S. Watson, *Analysis shows horrifying extent of abuse sent to women MPs via Twitter*, *The Conversation*, vol. 6, 2019.
- [19] L. Rosner, S. Winter, and N. C. Kramer, *Dangerous minds? Effects of uncivil online comments on aggressive cognitions, emotions, and behavior*, *Computers in Human Behavior*, 2016;58:461-70.
- [20] G. M. Chen and Y. M. M. Ng, *Nasty online comments anger you more than me, but nice ones make me as happy as you*, *Computers in Human Behavior*, 2017;71:181-8.
- [21] P. M. Valkenburg, *Understanding self-effects in social media*, *Human Communication Research*, 2017;43:477-90.
- [22] J. Lee and C. Jin, *The relationship between self-concepts and flaming behavior: Polarity of the online comments*, *Journal of Theoretical and Applied Information Technology*, 2019;97:2518-29.
- [23] E. A. Jane, *Gendered cyberhate as workplace harassment and economic vandalism*, *Feminist Media Studies*, 2018;18:575-91.
- [24] E. A. Jane, *Systemic misogyny exposed: Translating rape-gish from the manosphere with a random rape threat generator*, *International Journal of Cultural Studies*, 2018;21:661-80.
- [25] N. Dehingia, <https://gehweb.ucsd.edu/social-media-sexist-online-gender-based-violence/>, 2020.
- [26] I. S. Ismail and N. H. Shafie, *English informal language learning through social networking sites among Malaysian university students*, 2018.
- [27] M. F. Samat and N. A. Awang, Siti Nor Adawiah Hussin, Farahiyah Akmal Mat Nawi. *Online Distance Learning Amidst COVID-19 Pandemic Among University Students: A Practicality of Partial Least Squares Structural Equation Modelling Approach*, *Asian Journal of University Education*, 2020;16(3):220-33.
- [28] S. W. Azumah, N. Elsayed, Z. ElSayed, and M. Ozer, *Cyberbullying in Text Content Detection: An Analytical Review*, arXiv preprint arXiv:2303.10502, 2023.
- [29] F. Shah, A. Anwar, I. ul haq, H. Al-Salman, S. Hussain, and S. Al-Hadhrami, *Artificial intelligence as a service for immoral content detection and eradication*, *Scientific Programming*, 2022;2022:1-9.
- [30] V. Golzard, *Economic empowerment of Iranian women through the internet*, *Gender in Management: An International Journal*, 2020;35:1-18.
- [31] Z. Lin and L. Yang, *Individual and collective empowerment: Women's voices in the #MeToo movement in China*, *Asian Journal of Women's Studies*, 2019;25:117-31.
- [32] P. Manoj, S. Krishna, and R. Sebastian, *Women Empowerment in Digital India and the Kerala Knowledge Economy*, *Academy of Marketing Studies Journal*, vol. 27, 2023.
- [33] B. Huber and L. Q. Baena, *Women scientists on TikTok: New opportunities to become visible and challenge gender stereotypes*, *Media and Communication*, 2023;11:240-51.
- [34] T. State Planning Board, Kerala, India, https://spb.kerala.gov.in/sites/default/files/2022-03/ECNO_%20ENG_21_%20Vol_1.pdf, March 2022.
- [35] O. Ali and P. Manoj, *Impact of Falling Price of Rubber-A Case Study of Kothamangalam Taluk in Ernakulam*

- District, *Indian Journal of Economics and Development*, 2020;16:118-24.
- [36] L. Yuewen, The Dilemma of Women's Voices in the Post-Epidemic Era: Misconceptions of Feminism on Digital Media Platforms-The Example of Sina Weibo, *Psychology*, 2023;13:88-103.
- [37] Z. Chenyu, An Exploration of Radical Feminism Based on Microblogging Platform-Taking the Blue Book on Social Mindset Released by Chinese Academy of Sciences as an Example, *Sight and Sound*, 2020;7:183-4.
- [38] F. B. Thomas, The Role of Purposive Sampling Technique as a Tool for Informal Choices in a Social Sciences in Research Methods, 2022.
- [39] S. Denieffe, Commentary: Purposive sampling: complex or simple? Research case examples, *Journal of Research in Nursing: JRN*, 2020;25: 662.
- [40] Y. M. Jung, Data analysis in quantitative research, 2019.
- [41] B. Melovic, A. J. Stojanovic, T. Backovic, B. Dudic, and Z. Kovacicova, Research of Attitudes toward Online Violence-Significance of Online Media and Social Marketing in the Function of Violence Prevention and Behavior Evaluation, *Sustainability*, 2020;12:10609.
- [42] P. Kumar, A. Gruzd, and P. Mai, Mapping out violence against women of influence on Twitter using the cyber-lifestyle routine activity theory, *American behavioral scientist*, 2021;65:689-711.