



Analyzing Digital Propaganda on X through Topic Modelling Approach: The Case of Afghanistan

Abdul Wadood PhD Scholar, Department of Media Studies, Bahria University Islamabad, Pakistan

Shabir Hussian Professor, Department of Media Studies, Bahria University Islamabad, Pakistan

Corresponding Author: PhD Scholar, Department of Media Studies, Bahria University Islamabad, Pakistan.

Email: wadoodyoufzaiff@gmail.com)



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Abstract: *The dissemination of propaganda has become a formidable weapon, with nation-states exploiting social media platforms to engineer narratives favorable to their geopolitical interests. This study delved into Indo-Pakistan states' orchestrated propaganda in the wake of the Taliban's recapture of Afghanistan. This period is marked by a sophisticated blend of propaganda strategies to mold online discourse. Utilizing a dataset derived from X (formerly Twitter), the research examines how Pakistan and India leveraged information warfare to advance their politico-diplomatic narratives, shedding light on the propaganda strategies of such digital warfare and the emergence of narratives and counter-narratives. The findings highlight the instrumental role of propaganda strategies in amplifying political, diplomatic, security, and humanitarian narratives and manipulating public discourse, with distinct tactics and officially approved state maneuvers identified through the topic modeling and analyzing key strategies of propaganda.*

Key Words: Digital propaganda, India and Pakistan, X (Former Twitter), Afghanistan, Topic Modelling

Introduction

The arrival of computer-generated propaganda by means of social media has caused novel warfare and made use of automation and algorithms to support effective online discourse. This includes the spread of disinformation and propaganda sponsored by the state, which helps in manipulating ideology and exercising control, as noted by Woolley and Howard (2017). To accomplish their goals for information control and manipulation, governments and other groups manage and control the power of computer resources, internet capabilities, and massive datasets.

Social media has become a vital tool for many states throughout the world in spreading misinformation, gaining control, influencing society, and furthering their objectives, as stated by Nyst and Monaco (2018) and Weedon, Nuland, and Stamos (2017). This widespread tendency highlights how social media has a big impact on public opinion and political discourse. According to Wanless and Berk (2021), the ongoing adaptation of propaganda tactics to media and technical advancements emphasizes how crucial it is to keep an eye on media discourse, particularly on social media sites. Similarly, the emergence of malevolent

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actions and manipulative tools like bots and trolls highlights the necessity of identifying and analyzing these phenomena, along with the stories and communities that sustain them. (Starbird K, [2019](#); Linvill DL, Warren PL, [2020](#))

Developing computer-generated propaganda as a potential tool has forced the growing conflict between India and Pakistan. Both countries leverage sophisticated propaganda techniques to influence public opinion, build narratives, and continue digital warfare, with each side fulfilling its own stakes. Research reveals that they exert influence on social media platforms like X (formerly Twitter), Facebook, and WhatsApp to pursue their goals (Bradshaw & Howard, [2018](#); Ahmed, [2021](#)). This empowers them to spread information rapidly, which targets a particular group. Additionally, automated bots and cyber troops are credible sources for them to disseminate targeted information, bolster narratives approved by the government, and forge a false impression of extensive public support (Beskow & Carley, [2019](#); Chaturvedi, [2020](#)).

The Pakistani and Indian media help in creating narratives to shape public opinion and gain support, with the Indian media employing the ideologies of nationalism and patriotism to keep the multitude of people united against perceived threats, particularly in connection with the issues of Kashmir and border conflicts with China (Chaturvedi, [2020](#)). On the other hand, the Pakistani automated propaganda portrays India as a tyrannical state, emphasizing human rights abuses in Kashmir in a bid to win the sympathy and support of the International Community for the Kashmir cause (Ahmed, [2021](#)). By building their particular narratives, India and Pakistan target to legalize their positions and strengthen their support base both domestically and internationally.

An uninterrupted cycle of narratives and counter-narratives provokes tension between Pakistan and India. In this regard, India rejected the Pakistani assertions by representing itself as a champion against terrorism, portraying Pakistan as a sponsor of terrorism. In retaliation, Pakistan focuses on

the alleged human rights violations and political persecution in Kashmir by India (Awan, [2019](#)). This computer-generated propaganda war carries significant ramifications for regional stability and international relations, encouraging disinformation and misinformation that intensify conflicts and mistrust (Mare, Mabweazara, & Moyo, [2020](#)). Additionally, these offensives extensively impact public opinion, divide societies, fortify nationalist biases, and facilitate domestic support for foreign aggression and policies (Chaturvedi, [2020](#); Ahmed, [2021](#)).

Indo-Pak media hold a long historical account of encountering propaganda against each other (Iqbal and Hussain, [2019](#); Bose, [2011](#)). However, these computer-generated propaganda campaigns have greatly influenced the digitally changing world. This study examines the propaganda tools used by Pakistan and India during the takeover of Afghanistan by the Taliban in August 2021. With a view to providing comprehensive details of the context, this current research paper explores the underlying themes and topics of the automated propaganda war through a topic modeling approach.

Development of Digital Media in India and Pakistan

In 2023, India emerged as the world's second-largest online market with more than 700 million active internet users (Statista, [2023](#)). This pivotal growth is led by the expansion of digital media, charged by increased penetration of smartphones, falling data costs, and government drives such as Digital India. Internet usage has risen and revolutionized communication, information propagation, and people's discourse in India for the last ten years. Digital transformation has greatly influenced the country's online landscape.

Globally making it one of the second-largest markets for social media (Statista, [2023](#)), India is profoundly affected by social media's influence on public and political discourse with more than 450 million smartphone users. The extensive use of platforms such as

Facebook, WhatsApp, Instagram, and X has conformed to the daily routines of Indians and paved the way for people to interact, share information, and be involved in political argumentation.

Similarly, Pakistan's digital revolution was initiated in the late 90s with the beginning of internet services, marked by the inauguration of the Pakistan Telecommunication Company Limited (PTCL) and the commencement of dial-up connections (Khan, 2018). The common adoption of mobile phones, especially smartphones, developed the service of digital media. A great achievement was accomplished in 2014 when telecom operators started 3G and 4G networks, making way for mobile internet usage and digital content accessible to a multitude of people (Riaz, [2020](#)).

Digital development has affected the country's digital landscape profoundly, leading to extensive media and internet usage.

Why Study X (Formerly Twitter) for Digital Propaganda in India and Pakistan?

With more than 30 million internet users in the region as of 2023 (Statista, [2023](#)) India and Pakistan rose to prominence as main actors for the X's growth, especially among the urban, educated, and politically charged population. This platform is accessed as a potential tool for news, social activism, and political debates, exerting its position as a powerful platform for public discussions in the region.

To shape public opinion and influence narratives, X's (formerly Twitter) with a diverse user base is represented as a fascinating platform for propagandists, including journalists, politicians, social activists, and common citizens. The platform's existing nature enables prompt communication, giving insight into unfolding events, allowing propagandists to increase their messages, countering opposite views, and manipulating public discourse. Research experts can comprehend these digital propaganda strategies and their impact on public thinking by studying X (formerly Twitter). Moreover, X's global outreach makes propaganda endeavors stronger to surpass

national borders, influence international audiences, and change perceptions on geopolitically important issues like the crisis in Afghanistan and the issues of India-Pakistan. The features of the algorithmic platform, including current topics and algorithms, play a significant role in promoting certain content over others. Highlighting the importance of analyzing Twitter's algorithmic changes in the context of propagating information, propagandists make use of these algorithms to increase visibility and traction.

The analysis of X (formerly Twitter) features, content propagation strategies, and efficiency of propaganda narratives can give stakeholders a broad understanding of the information intricately applied in the digital age. The understanding of digital media can enable them to develop influential measures to retaliate its shocks and assist them in searching out the issues of online information abuse

Methodology

To address the research questions, the scholar employed topic modeling. Topic modeling which is a machine learning technique finds out hidden thematic patterns within a file of documents often called "corpora" (Hong et al., [2011](#)). In order to comprehend fundamental narratives, this technique allows an inductive approach by enabling the researcher to analyze the leading themes and topics from broad datasets created by social media platform X (formerly Twitter). This is a valuable technique in searching out millions of tweets to understand the evolution of public discourse (Davison et al., [2011](#)).

A dataset constituting English-language tweets revealed the takeover of Afghanistan by the Taliban for a period of one and half years soon after the debacle (15 Aug 2021 to 14 Jan 2023). The geopolitical conditions during this period, marked by tensions between India and Pakistan—the two nuclear-armed nations—were influenced by different political, security, and domestic developments. To achieve their strategic goals, the governments of India and Pakistan were involved in all-out propaganda campaigns.

Preprocessing and Data Collection

Preprocessing includes tokenization, elimination of stop words, and stemming to improve the effectiveness of subsequent examination. The elbow method is then used, which comprises the execution of the Means clustering algorithm with unlike values of K . This technique determines the most appropriate number of topics (K) by assessing the within-cluster sum of squares across distinct values of K . The purpose is to identify the 'elbow' point within-cluster sum of squares (WCSS) plot, showing the equilibrium between model complexity and its ability to elaborate the data. The Python programming language is employed for its accomplished libraries, such as `sckit-learn` and `gensim`, helping in the implementation of the elbow method and topic modeling. This research focused on the Means clustering algorithm known for its simplicity and productiveness, in the elbow method usage. The Latent Dirichlet Allocation (LDA) algorithm facilitates Topic modeling. LDA is a probability model used to attach words to each topic and topics to each tweet on the basis of their observed co-occurrences (Blei et al., 2003). The researcher evaluated the final topic distributions and took out the most probable words for each topic discussion.

The analysis section gives a detailed account of the analyzed topics, their mutually dependent words, and the distribution of topics across the dataset. Interpretations include a qualitative analysis of the most occurring words for each topic to furnish insights into the leading topics and themes within the data. To validate the connectivity and importance of the assigned topics, the researcher evaluated sample tweets from each identified topic and made minor changes to ensure the meaningful categorization and interpretation of themes.

Findings

Social media campaigns provide an analysis of the Taliban's recapturing of Afghanistan and its diplomatic, humanitarian, and security narratives exploited by Pakistan and India. The

findings reveal that each country takes advantage of social media to exert influence on global perceptions and advance their ambitious agendas amidst the geopolitical landscape.

Pakistan's using soft power diplomacy indicates the "Humanitarian Assistance" (25.09%). The stress on giving aid not only serves humanitarian needs but also aims at shaping international narratives in favor of Pakistan, which diverges its moves in the wake of ongoing information warfare (Hussain et al., 2021). In terms of humanitarian efforts, international organizations, such as the OIC, persuade Pakistan to use global partnerships to strengthen its diplomatic position in the comity of nations (Geiß & Lahmann, 2021). Moreover, paying attention to "Regional Cooperation and Diplomacy" (15.68%) indicates Pakistan's efforts to look for the changing dynamics in Afghanistan, keeping in view its strategic alliances.

Social media in India portrays a dominant narrative on "Counter-terrorism and Conflict in Kashmir" (17.27%) and exploits the security situation in Afghanistan to assert its counter-terrorism strategies in Kashmir. The issue of terrorism is being presented as a regional issue by leveraging international partnerships to make its stance stronger (Shivam, 2023). Spreading disinformation about Pakistan's alleged involvement in terrorism, the role of social media in India further weakens bilateral relations (Khan, 2019). Additionally, India's paying attention to "Diplomatic Initiatives" (11.77%), as reflected in its advocacy at the G20 and the UNSC (Dipanjan Roy, 2021), provides an instance of its efforts to engage with global powers and international forums to improve its diplomatic position.

The research findings have also reflected on the impact of political discourse in both India and Pakistan. India, as far as the application of propaganda is concerned, encourages Hindu nationalism and presents Pakistan as an enemy for broader political and diplomatic strategies (Shivam, 2023). Casting the mutual nature of information warfare (Ahmed, 2021), Pakistan's media, on the

contrary, has heightened anti-India sentiments and called into question the role of India in regional terrorism. With both nations taking advantage of these platforms to advocate their narratives (Geiß & Lahmann, 2021; Rahman et al., 2023), the role of international actors and factors on multiple forums has been significant in shaping the discourse.

As the research findings state owing to digital warfare, Pakistan and India, to exert influence on public opinion and diplomatic outcomes regarding the Taliban’s taking over of Afghanistan, have applied different strategic themes. In connection with warfare narratives, the efforts of counter-terrorism strategies, humanitarian aid, international engagement, and regional diplomacy show the multifaceted nature of their information. These instrumental strategies not only expose the geopolitical objectives of both India and Pakistan but also add to the developing intricacies of their bilateral relationship.

Conclusion

The findings conclude that both India and Pakistan, employing leading themes aligned with their national ambitions and geopolitical goals, have been engaged in an uninterrupted cycle of strategic communication. Having polarized the digital environment, the media content and strategic narratives are further intensifying the conflict. As exposed through the selective geopolitical manipulation, historical grievances, and humanitarian concerns, the complex nature of the Afghan issues in relation to India and Pakistan stresses the need for more balanced and constructive approaches to their mutual conflicts.

As the research confirms, both India and Pakistan, applying digital propaganda, remain

engaged in modern warfare information strategies. This research indicates that both nations have employed computer-generated propaganda and bolstered particular narratives to mold public opinion (Woolley & Howard, 2017). Numerous research studies have documented the utilization of trolling and proved the strategic propagation of information on social media platforms (Aleroud & Gangopadhyay, 2018).

The current study highlights the developing nature of warfare information propaganda in South Asia; particularly, keeping in view, the context of the Taliban’s taking over Afghanistan. Social media platforms like X (formerly Twitter) amplifying the outreach and influence of propaganda efforts presses the need for the understanding of the digital information war.

Topic modeling has been instrumental in digital warfare, exposing the leading themes and topics propagated by both India and Pakistan and revealing a strategic application of themes and topics aligned with the formative phases of the conflict. It is evident from the fact that pro-Pakistan and pro-India strategic themes have individually been amplified to shape public opinion and create a polarized digital environment. In order to justify their actions, India and Pakistan use digital propaganda that mingles with the themes of diplomatic efforts, humanitarian assistance and human rights advocacy, international engagement, strategic manipulation of information, terrorism, and different narratives. Taking insights into these themes and topics is essential to analyze the growing information warfare and its adverse effects on conflicts.

Tables 1

Value of K for Each Topic

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
Afghanistan	Afghanistan	Pakistan	Pakistan	Afghanistan
Pakistan	OIC4Afg	Khan	attack	Pakistan
APP News	Session	UN	terrorist	FM
FS	Foreign	APP News	UN	humanitarian
UN	Extraordinary	Aftab	people	situation

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
Peace	Pakistan	Hasan	APP News	Afghan
Via	CFM	world	flood	support
meeting	17th	Afghanistan	PR	peace
Also	Islamabad	support	force	community
shared	Minister	Minister	security	APP News
Topic 6	Topic 7	Topic 8	Topic 9	Topic 10
Afghanistan	Afghanistan	UN	Pakistan	FM
support	humanitarian	FM	condolence	Minister
Pakistan	FM	right	family	Foreign
FM	Pakistan	meeting	APPNews	PR
UN	Afghan	Pakistan	loss	US
visit	must	Security	proud	UN
people	issue	Meeting	people	APPNews
humanitarian	crisis	APPNews	attack	UNGA
US	OIC	protection	terrorism	General
million	SG	commitment	life	Meeting

Table 2

Top 10 words in 10 topics (Pakistan - Taliban Recapture of Afghanistan → 10)

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6
US	Khan	terrorist	Minister	people	report
India	case	Police	Affairs	use	News
State	Mumbai	Kashmir	Sharma	due	AFP
Indian	Delhi	area	Ministry	Amritsar	Court
WATCH	arrested	Jammu	Prime	break	said
Secretary	accused	force	Defense	MoS	Afghanistan
ANI	registered	security	Visuals	vaccine	Agency
Afghanistan	Police	killed	Modi	India	Tunisha
via	Pakistan	encounter	2022	Afghanistan	medium
Blinken	Act	recovered	External	million	say
Topic 7	Topic 8	Topic 9	Topic 10	Topic 11	
UN	Khan	PM	troop	US	
India	Kerala	CM	Army	President	
Afghanistan	BJP	people	drone	Biden	
terrorism	Governor	Congress	Indian	Ukraine	
UNSC	Delhi	also	BSF	Joe	
EAM	people	Modi	Punjab	Russia	
Council	CM	Union	area	PM	
Security	Bengal	come	border	Russian	
Jaishankar	leader	country	fired	House	
country	Congress	India	near	meeting	

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