

OTDK-dolgozat

2025

BUDAPESTI GAZDASÁGI EGYETEM

Külkereskedelmi Kar



BGE

**CHINA'S DIGITAL PUBLIC DIPLOMACY ON TWITTER: USERS'
PERCEPTION OF THE BELT AND ROAD INITIATIVE**

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Kézirat lezárásának dátuma: 7 November 2023

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LIST OF ABBREVIATIONS

BRF	Belt and Road Forum
BRI	Belt and Road Initiative
CPEC	China-Pakistan Economic Corridor
FOCAC	China-Africa Cooperation
G7	Group of Seven
ICTs	Information and Communication Technologies
LDA	Latent Dirichlet Allocation

This paper is a part of Nguyen Thanh Thuy Trang's diploma thesis submitted at Budapest Business University 2023

1. INTRODUCTION

Given changes in its domestic power and the international environment in recent years, China's foreign policy has constantly evolved. During the period of Deng Xiaoping's leadership, China's diplomatic strategy emphasized the principles of "Observing quietly, consolidating our position, handling matters prudently, concealing our capabilities while waiting patiently, skillfully maintaining a low profile, refraining from asserting leadership, and focusing on economics and domestic affairs" (Jiang, 2021). However, Deng's "low profile" strategy has been replaced by "striving for achievements" and "major country embodying Chinese characteristics" of Xi Jinping. This implies that a more self-assured and powerful China is ready to take center stage in global affairs and vigorously protect its interests by playing the role of a "major country." (Westcott & Jian, 2020). The most notable indicator of this change is the ambitious Belt and Road Initiative (BRI), created with the aim of improving China's connections with Africa, Asia, Europe, and Latin America by means of interconnected trade routes, infrastructure, and economic partnerships. Since its announcement in Kazakhstan in 2013, the BRI project has garnered attention and sparked diverse perceptions across the world. While the BRI has significant benefits, including economic opportunities, there is lingering skepticism in many countries regarding China's geopolitical and strategic motives along with apprehensions about the possibility of small and weaker economies becoming ensnared in a concealed debt trap (Yang, 2021) .

In an era defined by the ascendancy of digital diplomacy and soft power, the role of social media platforms has become increasingly pivotal in shaping the narratives of nations on the global stage. The concerns over Chinese public diplomacy and its soft power and how it is received in various regions through broadcast, online and printed news have been previously addressed by researchers. However, there has been limited attention given to how social media users engage with and react to how China exercises its digital diplomacy on online platforms.

Considering the importance that China assigns to the Belt and Road Initiatives, this paper attempts to 1) Explore the level of online interaction by analyzing prevalence and geographic spread of tweets and retweets concerning BRI on Twitter. By analyzing the content and themes of these tweets, the paper also aims to 2) Gain insights into the subjects that Twitter users associated with the BRI, shedding light on the focus areas and concerns within this digital discourse. Lastly, it aims to 3) Gauge public sentiment, opinions, and interactions concerning the BRI, offering valuable insights into how the initiative is perceived and received, and who are the main actors behind this

perception. Thus, the paper aims to make a contribution to a more nuanced understanding of China's digital diplomacy efforts and the global reception of BRI on Twitter, contributing to the field of international relations and digital diplomacy, especially in the context of Twitter by answering three research questions:

- 1: What is the prevalence and geographic spread of tweets and retweets related to the BRI?
- 2: What are the primary topics covered in BRI-related tweets?
- 3: What are the common reactions of Twitter's users to the BRI?

2. LITERATURE REVIEW

2.1. Public Diplomacy and Soft Power and nation branding

Diplomacy, at its core, centers around the art of persuasion and influence. In this realm, public diplomacy distinguishes itself by employing distinct methods and targeting a specific audience for influence and persuasion. Although its meaning has evolved over time, public diplomacy, initially articulated by Edmund Gullion in his Foreign Affairs article titled 'The New Diplomacy,' encompasses governments' efforts to communicate with foreign publics to promote their national interests and enhance their global image. In line with Bull's description in 1977, traditional diplomacy encompasses "the management of relationships between nations and various entities in the realm of politics, conducted through official policies and peaceful methods". However, these state-controlled perspectives have faced challenges from the New Public Diplomacy, which not only engages with policy-makers and opinion leaders but also reaches a wider net to include a much broader population, including those who may not be directly involved in the decision-making process (Evans, 1990). In other words, rather than being limited to private meetings among state leaders, public diplomacy embodies a more open and transparent aspect of diplomatic engagement. The presence of public diplomacy thus underscores the ever-evolving nature of diplomacy, where, in this context, non-state actors, particularly the public, are increasingly pivotal in determining the success of government policies.

Most scholars in this field generally agree on the intended outcomes of various public diplomacy efforts. These include ensuring that the messages being conveyed are "acknowledged," embraced, and comprehended, and understood, cultivating and strengthening a favorable attitude towards the conveyed policies among the target audience, and ultimately enhancing the recognition, positive image, reputation, and international standing of the home country (Leonard, 2002). Indeed, public

diplomacy revolves around cultivating relationships by comprehending the requirements of other nations, cultures, and populations; conveying our perspectives; resolving misconceptions; and seeking opportunities for mutual understanding and cooperation (Lewis, 2014). These narratives help shape the perception of a nation and its policies on the global stage and contribute to the achievement of diplomatic objectives.

Public Diplomacy is considered as one of soft power's key instruments (Melissen, 2005). As stated by Nye Jr. (20008), soft power pertains to the capacity to understand and influence the attention directed toward a nation's cultural resources. This can be accomplished through worldwide broadcasting, the facilitation of cultural exchange initiatives, the enhancement of cultural exports, and the formulation of policies that promote cultural interactions. Joseph S. Nye expanded on this concept by asserting that the emphasis should be on attraction and persuasion, rather than resorting to the coercive application of hard power, which includes military force and economic resources (Nye, 2008). Soft power is regarded as a valuable asset that can be utilized to attain specific objectives. (Creemers, 2015). This highlights the crucial role of person-to-person interactions and public diplomacy as fundamental components of soft power, enabling the engagement and impact on global audiences by fostering cross-border cultural communication.

In this context, China serves as a prominent illustration of the significant impact of soft power in its public diplomacy efforts. Under the Deng Xiaoping era, China's diplomacy was to "Observing quietly, consolidating our position, handling matters prudently, concealing our capabilities while waiting patiently, skillfully maintaining a low profile, refraining from asserting leadership, and focusing on economics and domestic affairs" (Jiang, 2021). However, Deng's "low profile" strategy has been replaced by "striving for achievements" and "major country with Chinese characteristics" of Xi Jinping. This implies that a more self-assured and powerful China is ready to take center stage in global affairs and vigorously protect its interests by playing the role of a "major country". This is exemplified by initiatives such as the establishment of Confucius Institutes worldwide and traditional cultural events. China also took advantage of both the 2008 Olympic Games and the 2010 Shanghai World Expo as occasions to engage in public diplomacy and enhance the promotion of the China Brand. etc,. Among them, BRI serves as a cornerstone of China's soft power strategy, fostering economic cooperation and infrastructure development across numerous continents.

Nonetheless, the way China interprets soft power has evolved to encompass many other additional aspects, including the significant role played by national media in countering what is seen as

negatively-perceived global impact of Western media as well as their involvement in spreading detrimental narratives about the country (Zhao, 2015). The first instance involved international public opinion concerning the SARS epidemic of 2003 when China experienced pressure from the international community. Another worth-mentioning case was the response of top leaders and diplomats to the COVID-19 pandemic criticism, where, in their endeavor to effectively “tell China’s stories well”. Complementarily, China's soft power concept also takes into account domestic objectives, including fostering nationalistic enthusiasm or demonstrating foreign support of China’s model to the national audience (Zhao, 2015). In spite of such efforts, China’s public diplomacy also has limitations and faces criticism from foreign audiences. This is evidenced by the highly centralized and state-controlled nature of China's diplomacy, resembling a modernized form of propaganda, and the limited transparency it demonstrates. (d'Hooghe, 2005).

2.2. Digital Diplomacy

The term is undergoing a rapid transformation, characterized by unprecedented advancements in information technology. As Nye (2009) rightly noted, "Information is power," and this power is becoming increasingly accessible to a growing portion of our population due to the relentless progress of the Internet. Due to its cost-effectiveness, high-quality performance, rapid accessibility, user-friendliness, and reliability, the Internet has been selected as a means to facilitate communication among governments and various other stakeholders.” (Gonesh & Melissen, 2005). There's no doubt that the Internet, particularly through the emergence of social media, has brought about a significant transformation in the international community today.

At the end of the 20th century, digital diplomacy occurred as a part of public diplomacy. According to van Ham (2008), digital diplomacy primarily serves as a means to convince the public that a nation advocates values, objectives, and aspirations that the public shares. Later, it was described as the utilization of Information and Communication Technologies (ICTs) on emerging social media platforms (Olena & Kamil, 2023). Besides, Lewis (2014) provided a definition of digital diplomacy as the utilization of digital communication tools, especially social media, by diplomats for communication among themselves and with the broader public. In the following year, Manor and Segev (2015) defined digital diplomacy as the utilization of social media platforms by a nation to promote its foreign policy objectives and actively influence its public image and standing. In short, digital diplomacy encompasses the utilization of technology and social media platforms to enrich communication and interaction among countries, their representatives, and the public. The

significance of digital diplomacy in the contemporary global landscape, therefore, cannot be underestimated. Gregory (2011) stressed the significance of dialogue and interaction for building relationships between nations, institutions, and individuals. The capacity of social media to facilitate discussions and cultivate connections between nations and foreign audiences was further demonstrated by Kampf, Manor, and Segev (2015) in their study, which compared public engagement on two social media Twitter and Facebook in the context of digital diplomacy.

Nevertheless, the explosion of information, as a result of the unlimited access to the Internet, raises concerns in modern public diplomacy. Nye pointed out a drawback to the digitization of public diplomacy, highlighting that "An abundance of information results in a shortage of attention." (Nye, 2004). Indeed, when the public is exposed to such a vast amount of information, it becomes a challenge to determine a reliable source of information among misleading and biased news. He, therefore, stated that the power would be held by those who can tell the differences between the valuable information. Moreover, given the fact that nowadays foreign ministries (MFAs) and embassies actively participate in a diverse array of online social networks, engaging in the dissemination, acquisition, and analysis of information (Manor, 2015), information that appears to be propaganda may face criticism and also backfire by damaging a country's image of credibility (Nye, 2008)

In the context of evolving approaches to public diplomacy, China has concurrently increased its digital diplomatic efforts on Western social media platforms. In fact, since 2014, every overseas Chinese Embassy has established a presence on many social media platforms, especially Facebook (Cappelletti, 2019). This allows the dissemination of information related to China's present-day affairs, events, and initiatives, as well as content that aligns with political correctness, to a wider audience. It also enables the public to initiate interactions with Chinese government representatives through digital platforms (Cappelletti, 2019).

2.3. Twitter Diplomacy: Belt and Road Initiative on Twitter

Due to China's stringent censorship on the usage of Internet and social media, a number of Global or worldwide popular social media platforms such as Facebook and Twitter are completely inaccessible within mainland China (Arsène, 2016). In addition, because of the media registration regulations and language barrier, it is more demanding to use the domestic platform Weibo (often referred as China's equivalent of Twitter) to meet the government's international communication

requirements. Hence, Twitter has seen increasing use in the realm of international political communication. It has been harnessed for monitoring and assessing global public sentiment, allowing for the dissemination of China's narratives to foreign audiences as part of the effort to convey its perspective to the world. Previous research also confirms that Twitter is considered as a crucial channel in its public diplomacy to effectively enhance China's global image (Cheng, 2015).

Twitter has given rise to a novel form of diplomacy referred to as Twiplomacy or Twitter diplomacy (Su & Xu, 2015). Over the past decade, governments worldwide have embraced Twiplomacy. It all began in 2007 when Barack Obama, then a Senator from Illinois, registered on Twitter, becoming the first global leader to establish an official presence on the platform. Later, following his victory in the presidential elections in 2016, President Trump emerged as the most widely followed politician on Twitter with his controversial, attention-seeking tweets on this platform. As noted by Sobacı and Karkin in 2013, politicians employ Twitter for more than just global diplomatic communication; they also use it for personal and political promotion. Hwang (2013) further suggests that Twitter has a positive impact on the credibility of politicians, which tends to result in significantly high usage of Twitter by political parties and prominent public figures..

Within this framework, diplomats also utilize Twitter as a platform for sharing information, expressing their perspectives, and even conveying their emotions to enhance diplomatic initiatives. Their Twitter messages serve the purposes of influencing public sentiment, offering education, forging connections, and fostering positive relations in the host country (Abbasi, et al., 2021). Though Twitter is blocked in China, Chinese leaders realize the influence of this Western-dominated global communication platform. Consequently, they encouraged Chinese diplomats and media to leverage Twitter, enabling them to connect with a wider range of global audiences, conveying China's stories. Consequently, diplomats have evolved into facilitators of international relationship-building, as indicated by Tam in 2018.

Research related to the Belt and Road Initiative (BRI) on the Twitter platform has seen significant interest in recent years. In 2019, Arifon, Huang, and Zheng conducted a comparative analysis of BRI perspectives from both Chinese and European viewpoints, employing a combination of press and Twitter analysis methods. Their research revealed that Twitter discussions primarily revolved around economic cooperation concerning the BRI. Additionally, Chinese media outlets and embassies actively utilized positive language to promote BRI-related topics (Arifon, et al., 2019).

Moreover, Abbasi (2021) applied content analysis and sentimental analysis of tweets during the second Belt and Road Forum (BRF), in which he concluded that the majority of tweet activity was generated by Chinese politicians and government officials and media groups. In 2023, Nwana and her colleagues employed computational analysis to delve into the topics of tweets and identify key actors within the Indonesian network. Meanwhile, Seoane (2023) conducted a similar study, spanning from February 9th, 2019 to January 3rd, 2020. Both research papers concur on the fact that Twitter users expressed critical viewpoints and negative reactions towards BRI. Chandra, Cambria, and Nanetti (2023) conducted research combining Twitter data with information from global news sources. Their study, surprisingly, discovered that the majority of the tweets they analyzed expressed positive sentiments towards the BRI. This contrasted with the critical perspectives observed in some earlier studies.

2.4. Twitter as a research tool

In the digital age, it is imperative that all official communication efforts are conducted in a connective, interactive, and timely manner. Deibert's vision in 1997 underscores the significant role played by the evolution of communication technology in shaping the communication environment and political interactions on an international scale. This aligns with the focus of public diplomacy research, which frequently centers on examining "two-way communication" and interactive models, as highlighted by Deibert in 1997. Furthermore, Twitter, as described by Purohit et al. in 2013, is a microblogging social media platform that allows two-way communication, enabling users to share ideas, thoughts, information, and opinions with others using 280 characters. Twitter is widely embraced by politicians, government officials, and ambassadors, as it enables its users to actively interact with posts through favorites (likes), and retweets (shares), replies (comments) (Purohit, et al., 2013). While Twitter is typically used for disseminating information, it also provides value by facilitating discussions, information-sharing, and the advancement of government policy agendas through two-way communication, thereby fostering relationship-building (Levenshus & Sundstrom, 2017). These features make Twitter an ideal tool for research, especially when compared to other social media platforms.

It is crucial to get the hang of the features of any social media platform comprehensively before carrying out a research as these features will play an essential role in understanding how users interact on the global landscape. Purohit et al. (2013) provided a description of the key elements of Twitter that are used for this paper as follows:

- **Tweet:** Tweet is a concise message or post on Twitter, which serves various purposes such as providing updates on user activities, sharing valuable information, reposting other users' content, engaging in conversations, etc.
- **Hashtag:** Hashtag is indicated by a word preceded by the '#' symbol (e.g., #Beltandroadinitiative), the hashtag is a convention within the platform designed for users to define topics. Its purpose is to efficiently represent a communication topic with minimal characters and to serve as a valuable tool for grouping conversations by topic. In addition, When a tweet includes a hashtag, it often indicates that the user wants their tweet to reach to a broader audience. (Townsend & Wallace, 2016)
- **Retweet:** Retweet, denoted as "RT," is a way for users to share another person's tweet with their own followers, similar to forwarding an email. When retweeting, the original writer acknowledges the source by using the built-in 'Retweet' feature, which results in the format 'RT @USER_NAME. For example, in the example “RT @John_99: The Third Belt and Road Forum for International Cooperation has provided a glimpse of China's future global engagement #BRI #BRIforum2023”, a user has shared a tweet from another user named John.

3. RESEARCH METHODOLOGY

3.1. Data collection

The article adopts a mixed methods approach, which is valuable for overcoming the limitations found in both qualitative and quantitative methods when studying data from social media, as noted by Schneiker et al. in 2018. This methodology entailed identifying, filtering, and analyzing a substantial volume of tweets, taking into account previous research works and individual contextual knowledge to address three research questions related to China's digital diplomacy.

Firstly, to carry out the analysis, the paper adopts the dataset from the article “The Belt and Road Initiative on Twitter: An annotated dataset”, which was available online in November 2022. The dataset was collected using the Twitter API by applying a set of specific keywords: “one belt one road”, “belt and road”, “maritime silk road”, new silk road”, and “silk road economic belt”, which included the words and their hashtag forms. This data was retrieved from Twitter within the timeframe spanning from September 7, 2013, to November 30, 2021. Furthermore, the dataset is annotated in terms of languages, emotional sentiment, geopolitical entities, and credibility. These annotations were generated through techniques like language detection, neural machine translation,

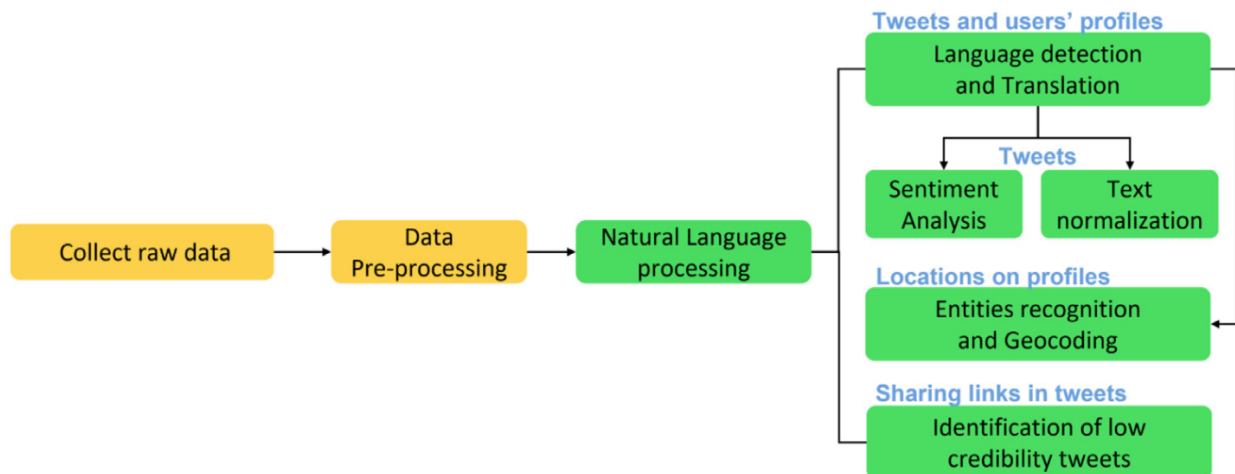
and lexicon-based sentiment analysis. According to the authors of the dataset, the emotional polarity and intensity of tweets were evaluated using the Valence Aware Dictionary and Sentiment Reasoner (VADER), implemented through the "vaderSentiment (version 3.3.1)" Python package. VADER calculates emotional polarity and intensity by averaging sentiment scores of words in a tweet based on a pre-evaluated sentiment lexicon. This tool is chosen for its high accuracy in analyzing social media content, including slang, sentiment-laden, symbols and emoticons.

All translated tweets in the dataset were analyzed and labeled with a value ranging from -1 (extremely negative) to +1 (extremely positive) to indicate the sentiment. The results of this sentiment analysis can be found in the folder named "sentiment_polarity" variable within the "01. Tweets" database. The study also uses information derived from primary and secondary data collecting. They are gathered from a variety of sources including official announcements, existing studies, journals, articles, publications, and newspapers. Figure 1 offers a visual representation illustrating the sequence of processing the dataset.

Direct link to the Data Article: <https://doi.org/10.1016/j.dib.2022.108711>

Direct link to the Dataset: <https://doi.org/10.25442/hku.18623522>

Figure 1: The processing sequence of the dataset.



Source: Chun-Yin Man, David A. Palmer & Junxi Qian (2021). The Belt and Road Initiative on Twitter: An annotated dataset

3.2. Data analysis tools

Given the huge volume of data collected in the database with 500,711 tweets and 714,794 retweets, the next step of this process will involve the use of Structured Query Language (SQL), which is a programming language used for managing and processing data, to retrieve relevant data from the database to answer three research questions. The preprocessed data is then exported to an SQL database for further analysis. A relational database schema was designed to accommodate the Twitter data, with tables for tweets, users, and associated metadata. The database management system provided the necessary infrastructure for storing, querying, and managing the large dataset effectively.

Moreover, the R programming language is chosen as the primary tool for text analysis, and topic modeling methods, called Latent Dirichlet Allocation (LDA) are adopted to extract ten distinct topics from the preprocessed Tweets during the two BRI Forum for International Cooperation in May 2017 and April 2019. Topic modeling methods have been chosen for this paper because they are widely used for handling discrete data and provide an effective means of uncovering hidden structures, such as semantics, within large datasets (Jelodar et al.,2019. For instance, as there is a semantic relationship exists between terms such as “dogs,” “cats,” and “snakes,” they could be grouped under a topic called “animals” in a text corpus, which means a collection of documents (Egger & Yu, 2022). In political science, Greene and Cross employed a topic modeling method to identify themes in extensive political speech datasets over time. This approach allowed them to pinpoint specific topics related to particular events at a given moment, as well as broad, enduring themes.. (Greene & Cross, 2017)

3.3. Data analysis methodology

Research Question 1: What is the prevalence and geographic spread of tweets related to the BRI?

To answer the first research question, the number of tweets and retweets mentioning BRI on Twitter in the period from 7 September 2013, when the BRI projects were launched, to 30 November 2021, were collected and analyzed. Analyzing Twitter data during this timeframe, in which the initiative gained momentum and underwent various developments including important events and milestones, would provide insights into how public discourse evolved as the BRI expanded. Also, The geographical distribution of tweets about the BRI is illustrated in order to provide valuable insights into the global reach and regional dynamics in the discourse surrounding the initiative. In

addition, by linking tweet locations to specific real-world events related to the BRI in those regions, we can establish correlations between online discussions and actual developments.

Research Question 2: What are the primary topics covered in BRI-related tweets?

In order to answer the research questions, the paper looks into the 50 most used hashtags around the BRI Tweets and identifies the top 10 topics during the BRI Forum for International Cooperation in May 2017 and April 2019. Firstly, the emergence of hashtag during the surveyed time period provides a snapshot of the most prominent and recurring themes in the discussion because containing a hashtag is intended for the tweet to reach a wider audience. (Townsend & Wallace, 2016) Secondly, identifying 10 topics not only reveals what issues are most salient but also helps us understand the priorities, concerns, and areas of interest of forum participants and the broader online community. Moreover, the approach supports comparative analysis between the two forum periods, enabling us to assess how the dominant topics evolved or remained consistent over time. Understanding these changes can provide more insights into the evolution of the BRI's narrative. The methodology adopted herein aimed to provide a rigorous and comprehensive framework for understanding the prevailing discussions and thematic undercurrents within the Twitter-sphere during the specified one-month period associated with the Belt and Road Forum in 2017 and 2019. The period of one month provides a sufficiently narrow time frame to analyze the immediate lead-up to, during, and post-event discussions, during which public and media interest is likely to be high. There were 16,428 tweets recorded during the first forum and 45,442 tweets were analyzed in the second forum.

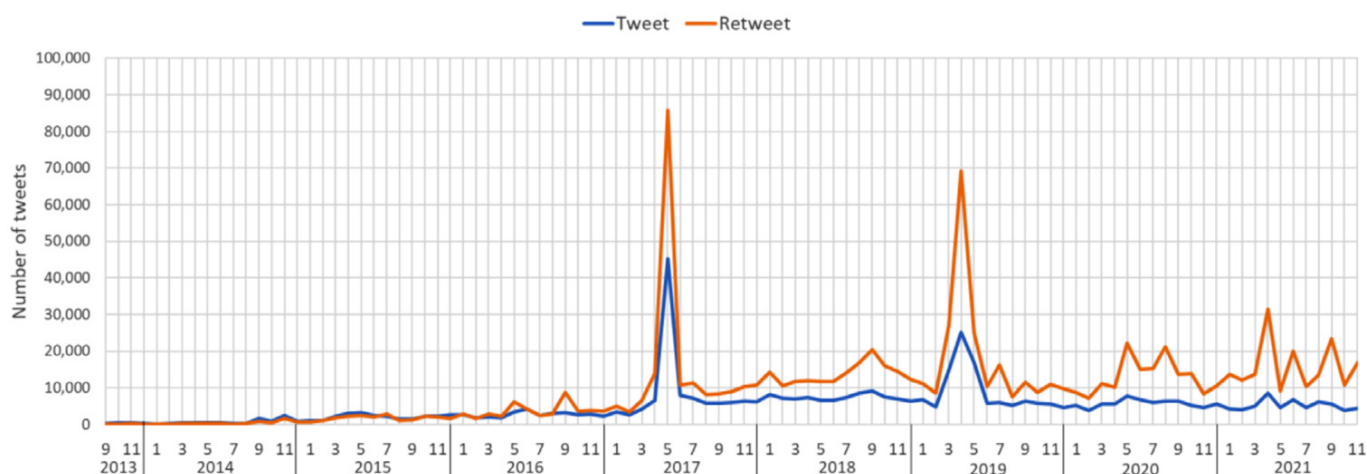
Research Question 3: What are the common reactions of Twitter's users to the BRI?

Lastly, the paper adopts sentiment polarity analysis to answer the third research question. This is because sentiment analysis involves assessing people's opinions, gauging the degree of agreement or disagreement on a particular subject, product, service, or even in the context of elections. (Anber, et al., 2016). Therefore, this paper attempts to understand the public sentiment associated with the BRI within the online discourse. The sentiment analysis has been carried out by the authors of the dataset.

4. RESEARCH RESULTS

4.1. What is the prevalence and geographic spread of tweets and retweets related to the BRI?

Figure 2: The number of tweets and retweets related to the BRI per month between 7-September-2013 and 30-November-2021

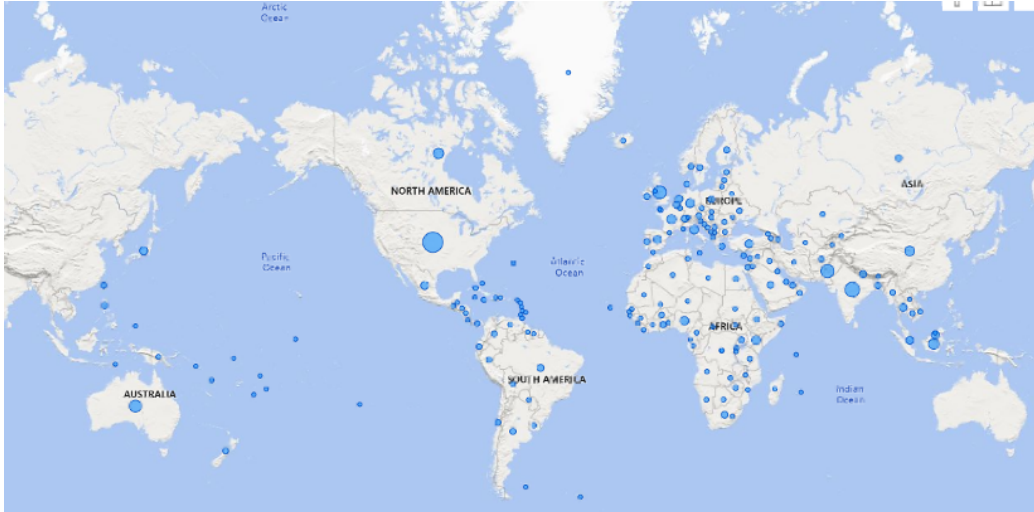


Source: Chun-Yin Man, David A. Palmer & Junxi Qian (2021). The Belt and Road Initiative on Twitter: An annotated dataset

In 2013, BRI was not a significant topic of discussion on the Twittersphere. The rate of tweets and retweets related to BRI remained relatively low throughout the year, with sporadic mentions and minimal engagement from the Twitter community. The first noticeable increase in the discussion of BRI occurred in 2015. This uptick in Twitter activity was likely driven by a significant event related to BRI, which is “Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road” commonly referred to as the 'Vision and Actions’ was announced in the Boao Forum on March 2015 (Ministry of Foreign Affairs, 2015). By the end of 2016, halfway through the year, the number of BRI-themed tweets and retweets experienced a gradual increase. This rise can be attributed to an event in which all 193 United Nations member states unanimously adopted a resolution expressing their support for the BRI and other economic cooperation initiatives. The resolution also called upon the international community to work together in providing a secure environment for these initiatives to thrive (Belt and Road Portal, 2016). This milestone was reflected in the Twitter activity, with the number of retweets reaching a significant milestone of 10,000 tweets, indicating a growing level of interest and engagement in

the discussion of the BRI. In May 2017, the first BRF took place in Beijing, and this event created a remarkable surge in Twitter activity. The number of BRI-related tweets related to the BRI reached 45,445 tweets that month, and the count of retweets approximately doubled that number, signifying a substantial increase in the discussion and engagement with BRF on the platform. Starting from June 2019, there was a drop in the average monthly number of tweets related to the BRI, reaching approximately 10,000 tweets per month. Nevertheless, it is noticeable that the rate of engagement for BRI-related tweets has been on the rise since the forum. In 2018, the number of retweets hit its highest point in the year with roughly 20,000 tweets, this can be attributed to the event ahead of the Summit of the Forum on China-Africa Cooperation (FOCAC), when China and Djibouti signing new agreements under the framework of the BRI (Xinhua, 2018). After experiencing a drop in the number of tweets to 10,000, the following significant spike in Twitter activity occurred in March 2019. This spike can be attributed to two major events. Firstly, it coincided with the news that Italy had decided to join the BRI, a significant milestone as it marked the first G7 country to become a part of the initiative (CNBC, 2019). Secondly, this spike in activity also corresponded with reports alleging that Pakistan had redirected funds allocated for BRI projects towards other purposes (The Economic Times, 2019). These two notable events generated heightened interest and discussions on the platform regarding the BRI, resulting in a spike in tweets during that period. The most significant and prominent surge during the research timeframe aligns with the BRF 2019, held from April 25th to 27th. This major political gathering, which drew participation from presidents and numerous delegates worldwide, garnered extensive coverage by international media outlets. Consequently, it also received substantial attention from Twitter users. Both of the largest spike highlights the significance of public diplomacy for China in its efforts to convey its narratives through mainstream media platforms. After the event, the number of BRI-themed discussions sharply dropped. Interestingly, while the number of BRI tweets slightly changed, the number of BRI retweets and only recovered to 15,000 retweets in the following month. The next two years witnessed the dynamics of BRI-related posts on Twittersphere. After eight years of launching, the popularity effect of BRI has significantly increased. It's important to note that the number of original tweets related to BRI was noticeably lower compared to the number of retweets. When the number of retweets significantly surpasses that of original tweets, it can be interpreted as a sign of robust engagement and support for the BRI within the online community. People sharing and amplifying the content through retweets can be seen as a sign of endorsement or interest.

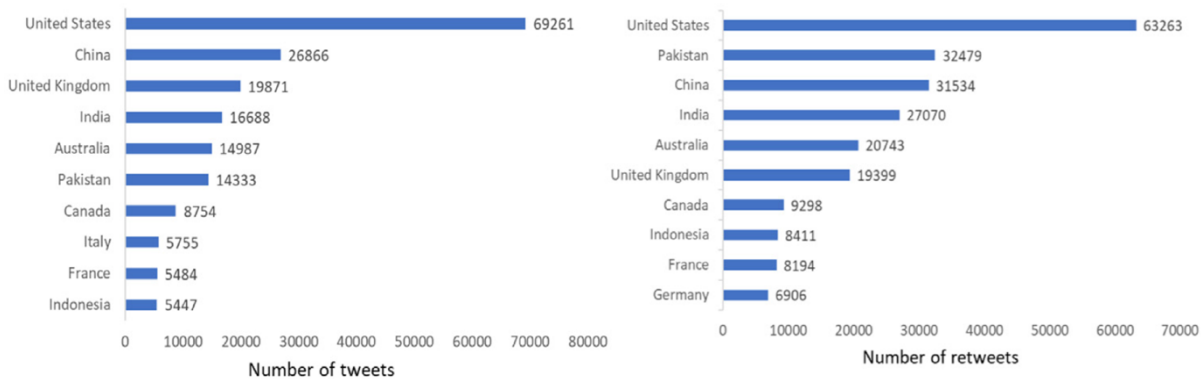
Figure 3: The geographical allocation of tweets and retweets related to the BRI



Source: Own Combination from the dataset by Chun-Yin Man, David A. Palmer & Junxi Qianc (2021). The Belt and Road Initiative on Twitter: An annotated dataset

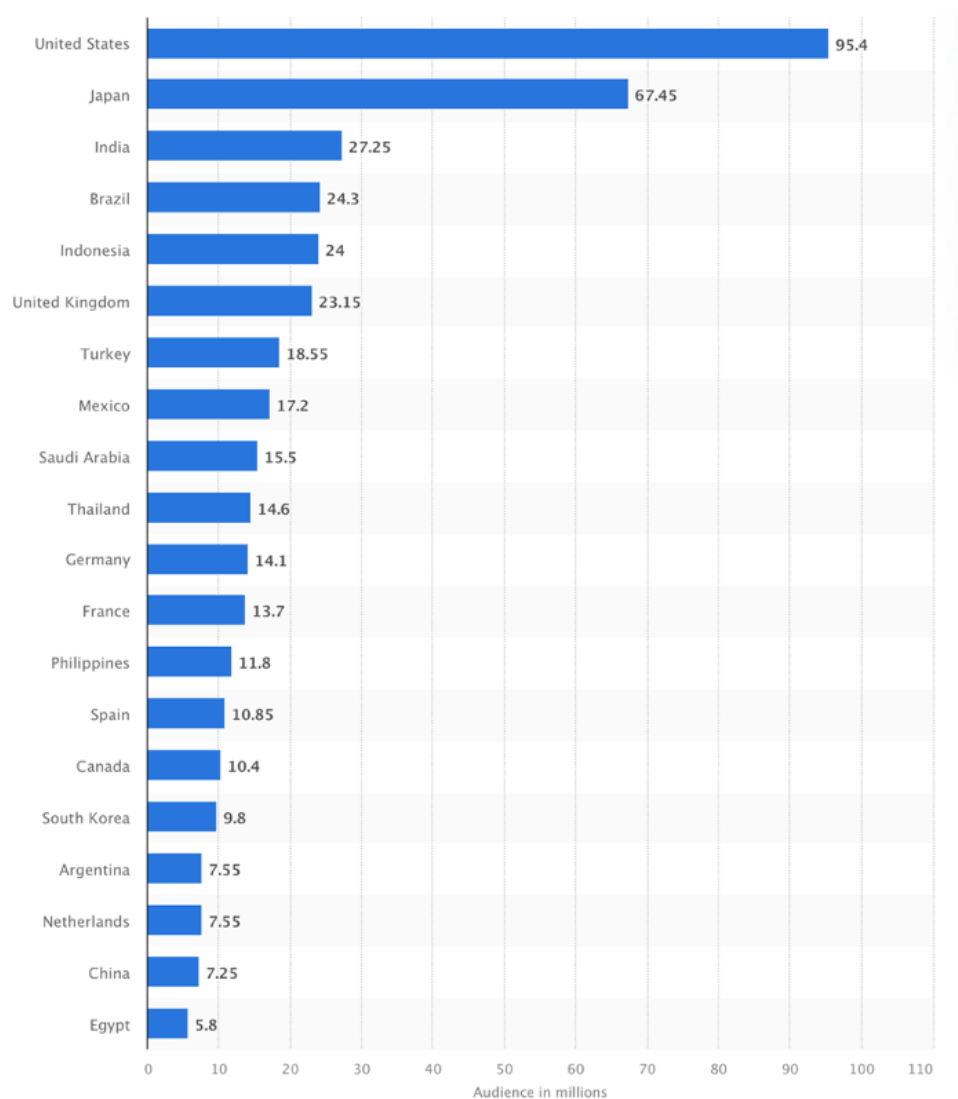
Regarding the geographical distribution of tweets, considering not all Twitter users make such information public on the platform, figure 3 demonstrates the widespread distribution of BRI-related tweets. As can be seen from the figure, the tweets are generated all around the world with the density in Asia, Africa, Europe, the Americas, Australia, together with Oceania. Obviously, geographical allocation is influenced in part related to the language of the tweets, but also due by the BRI-themed topics discussed regarding China's global responsibilities, particularly in the United States and the United Kingdom.

Figure 4: Top 10 leading countries by the number of tweets (Left) and retweets (Right)



Source: Chun-Yin Man, David A. Palmer & Junxi Qianc (2021). The Belt and Road Initiative on Twitter: An annotated dataset

Figure 5: Top countries according to the number of X (previously Twitter) users as of January 2023 (measured in millions)



Source: Statista 2023

Additionally, the popularity of Twitter as one of the dominant social media platforms in two countries has contributed to the prominence of BRI-related posts, as indicated in Figure 5. Given the fact that China ranks second to last in the number of Twitter users with 7.25 million users, yet appears as the second most prolific country in revealing geographical locations in BRI-related tweets, as shown in Figures 4 and 5. This suggests that despite having fewer Twitter users in comparison to some other countries, the Chinese Twitter users who do engage with the platform are particularly active and vocal in discussing and sharing content related to BRI. A closer look

into Twitter users confirms the active participation of Chinese state-affiliated media, Chinese government officials, Chinese government organizations etc. with 91,278 tweets, 15,709 tweets and 3,481 tweets respectively. Their active participation contributes to a significant presence in the BRI-related discussions on the platform, even if they represent a smaller portion of the overall Twitter user base. Among active countries were China's regional neighbors that joined or have close engagement with BRI with India tweeting 16,688 times, followed by Pakistan (14,333 tweets) and Indonesia (5,447 tweets). Furthermore, European countries like Italy and France have played a role in elevating the prominence of BRI-related topics on Twitter, highlighting the global nature of the discussions surrounding this initiative.

Overall, the figures indicate that efforts made by Chinese on Twitter related to BRI, while not reaching extremely high levels of popularity, have been effective in consistently generating content related to the initiative. Moreover, these efforts have succeeded in encouraging users from various areas of the world to engage in discussions and comment on BRI-related topics. This suggests a sustained and global interest in the BRI and a notable degree of interaction and conversation surrounding the initiative on the platform.

4.2. What are the primary topics covered in BRI-related tweets?

Figure 6: The 50 most used hashtags around the BRI Tweets

Hashtag	count	Hashtag	count	Hashtag	count
BeltandRoad	84499	KuşakveYol	2415	Cina	1411
China	53615	Europe	2333	ASEAN	1402
OBOR	18497	Asia	2287	Italy	1374
OneBeltOneRoad	16567	Business	2186	BRF2019	1300
Silkroad	11845	CCP	2126	debttrap	1292
CPEC	6758	Russia	2091	japan	1275
Pakistan	5759	TolakOneBeltOneRoad	2071	BRICS	1271
NewSilkRoad	5214	UlamaAswajaTolakOBOR	2044	homeschool	1269
BeltandRoadInitiative	5039	KhilafahAjaranAswaja	2043	Iran	1237
News	4397	TolakKolonialisasiKomunis	2032	USA	1223
India	3937	HongKong	1966	CCPChina	1194
Infrastructure	3662	Trieste	1885	finance	1133
Xijingsping	3168	COVID19	1871	geopolitics	1124
Trade	3150	Investment	1824	australia	1089
Africa	3131	us	1730	Road	1068
Beijing	3099	srilanka	1656	Belt	1411
Economy	2800	MaritimeSilkRoad	1642	TradeWar	1047
Chinese	2740	Auspol	1514		

Source: Chun-Yin Man, David A. Palmer & Junxi Qian (2021). The Belt and Road Initiative on Twitter: An annotated dataset

Within the dataset, 188,875 tweets, accounting for 37.72% of the total, contained one or more hashtags. In total, 50,876 distinct hashtag terms were collected. Figure 4 illustrates the 50 most frequently used hashtags in the dataset. Overall, #BeltandRoad and its alternatives and abbreviations such as #OBOR; #OneBeltOneRoad, #BeltandRoadInitiative, #Silkroad, #NewSilkRoad are the most mentioned hashtags. It is also noticeable that country-specific hashtags (e.g. “#Pakistan”; “#India”; “#USA”, “Russia”; “#Srilanka”, “#Italy”; “#Iran”; “#Japan”) are used relatively often by Twitter users. This is because countries like Pakistan, India, and Sri Lanka are key players in the BRI, with major infrastructure and trade projects linked to the initiative. Hashtags like #Russia and #Japan indicate the involvement of major regional powers and their roles in shaping the BRI's development and impact in their respective areas. Country-specific hashtags may be used to discuss bilateral relations and agreements between individual nations and China as part of the BRI throughout its development. These discussions can encompass topics such as #infrastructure, #economy #business, #investment, and #trade, which underscores the economic and financial dimensions of the BRI. These hashtags indicate a keen interest in the initiative's economic implications and its potential impact on global trade and finance. Meanwhile, “#Silkroad” and “#MaritimeSilkRoad” emphasize geographical and infrastructural elements. The variety of hashtags has reflected the BRI's multifaceted nature and different areas of interest of Twitter users. However, these hashtags also demonstrate the challenges and concerns of Twitter users. For example, the inclusion of hashtags like #debttrap and #TradeWar highlights discussions related to debt sustainability, and trade tensions, associated with the BRI.

Some other worth-mentioning hashtags are #TolakOneBeltOneRoad (Reject One Belt One Road), #UlamaAswajaTolakOBOR (Scholars of Aswaja Reject OBOR), #KhilafahAjaranAswaja (Caliphate Teaching of Aswaja) #TolakKolonialisasiKomunis (Reject Communist Colonization). These hashtags reflect specific viewpoints and discussions within Indonesia, and they are used by individuals or groups who hold particular stances on topics such as the BRI, political ideologies, and religious perspectives. The emergence of these hashtags carries significance in the digital age, where the internet and social media have evolved beyond mere tools for facilitating and mobilizing offline protests, as discussed by Goswami in 2018. Hashtag activism, the practice of using social media to build public support or advocate for a cause, has become a prevalent method for expressing the desire for change through online platforms. Therefore, when conducting research on specific hashtags or topics, it is crucial to be mindful of this phenomenon.

In order to delve deeper into topics revolving BRI on Twitter, the paper will continue with the analysis of Twitter communication during the two Belt and Road Forum for International Cooperation in May 2017 and April 2019.

Table 1: Top 10 topics by topic modeling during the first Belt and Road forum in May 2017

The First Belt and Road Forum	BRI Events	Belt and Road Forum	Topic 7.1: forum, beijing, world, cooperation, leader, attend, president, pm, international, putin Topic 10.1: road, belt, xi, president, chinese, jinpings, need, world, china, sign
	BRI Features	BRI and Investment	Topic 6.1: Road, belt, china, project, trade, global, chinas, news, invest, 124bn Topic 8.1: new, silk, china, say, billion, pledge, open, 124, globalization, everyone
		BRI and Development	Topic 4.1: China, road, plan, country, onebeltoneroad, infrastructure, part, big, make, along
	BRI Partners	BRI and CPEC	Topic 2.1: beltandroad, obor, economic, late, development, onebeltoneroad, daily, help, cpec, people Topic 5.1: one, belt, nawaz, sharif, obor, thing, 3, di, indonesia
		BRI and India	Topic 1.1: china, road, india, summit, belt, we, join, build, see, skip

Source: Source: Own Combination from the dataset by Chun-Yin Man, David A. Palmer & Junxi Qian (2021). The Belt and Road Initiative on Twitter: An annotated dataset

The results of topic modeling for the first BRI forum provide interesting insights on topics related to BRI among Twitter users. The first group includes two topics about BRF, which reflects the ongoing event at that time. Twitter users tweet about the relevant delegates, leaders, and any updates on the speeches of President Xi Jinping. The second group of topics describes distinct features of BRI including investment and infrastructure development. For example, Topic 6.1 and 8.1 mention about The sum of \$124 billion that Chinese President Xi Jinping committed to his fresh Silk Road initiative aimed at promoting a vision of peace, inclusivity, and open trade (Goh & Chen, 2017). The third group of topics is related to key partners of the BRI. Most of the tweets are related to China-Pakistan Economic Corridor (CPEC), which is a massive joint initiative aimed at

enhancing Pakistan's infrastructure to facilitate improved trade with China and promote greater connectivity among South Asian nations. The topic has positive reactions including keywords such as ‘help’, ‘development’, and ‘economic’. Additionally, this cooperation framework is part of BRI projects in a variety of infrastructure ventures spanning sectors like agriculture, energy, telecommunications, and more. Therefore, the significant scale of investment and its prominent role within the BRI’s routes explains the considerable interest that CPEC has garnered from Twitter users (Mayer & Zhang, 2020). As topic 5.1 suggests, Mr. Pakistan Prime Minister Nawaz Sharif underlined that CPEC is an economic undertaking open to all countries that has no geographical boundaries. However, India announced just hours ahead of the opening of the summit that it would not be attending. India's absence was a consequence of its objections primarily focused on the BRI, with a major point of contention being the China-Pakistan Economic Corridor (CPEC), a prominent project within the initiative that traverses the Gilgit-Baltistan region of Kashmir. (Taneja, 2017). The area is considered a disputed territory as both India and Pakistan claim all of it.

Table 2: Top 10 topics by topic modeling during the second Belt and Road forum in April 2019

The Second Belt and Road Forum	BRI Events	Belt and Road Forum	Topic 5.2: belt, xi, road, president, say, chinese, jinping, forum, green, open Topic 9.2: forum, beijing, second, international, cooperation, international, minister, pakistan, leader, attend, 2nd
		Italy joins the BRI	Topic 7.2: country, initiative, beltandroad, sign, chinese, join, china, italy, year, first
	BRI Features	BRI and Economy	Topic 8.2.: Beltandroad, bri, development, infrastructure, global , economic, trade, investment, economy, opportunity
		BRI and Development	Topic 4.2: new, road, silk, world, europe, africa, asia, putin, build, port
	BRI Partners	BRI and India	Topic 2.2: china, road, belt, initiative, deal, not, part, billion, india, summit
		BRI and Malaysia	Topic 3.2: china, road, belt, project, news, time, support, business, malaysia, back

		BRI and Indonesia	Topic 6.2: road, belt, one, china, initiative, obor, benefit, bring, indonesia, energy
	BRI criticism	BRI and dept trap	Topic 1.2: belt, road, chinas, initiative, debt, china, plan, summit, concern, sustainable

Source: Own Combination from the dataset by Chun-Yin Man, David A. Palmer & Junxi Qian (2021). The Belt and Road Initiative on Twitter: An annotated dataset

Overall, the results of topic modelling for the second Belt and Road forum adds more intriguing topics to our comprehension of Twitter conversations. Similarly, the table is also divided into three big topics including BRI events, BRI features, and BRI Partners, with an addition of BRI criticism.

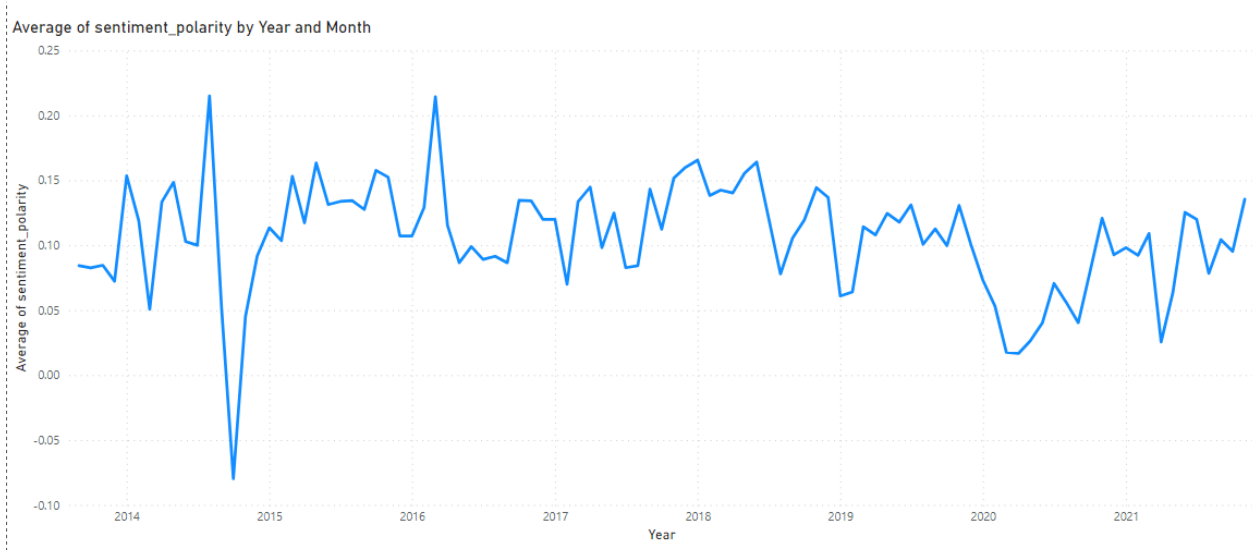
In terms of BRI events, topic 5.2 appears to focus on remarks and statements made by Chinese President Xi Jinping, emphasizing his role in the forum. The mention of "green" suggests discussions related to sustainable and environmentally friendly aspects of the Belt and Road Initiative. Meanwhile, Topic 9.2 revolves around the nature of the forum itself, being the second in its series. It highlights the international scope of the event, with mentions of cooperation, participation by ministers and leaders from various countries, and the location in Beijing. One of the most significant events taking place during this time was the decision of Italy to join BRI, which is demonstrated in Figure 1. Looking at the BRI features, Topic 4.2 delves into the geographical and infrastructural aspects of the BRI, spanning continents like Europe, Africa, and Asia. The mention of the "new Silk Road" alludes to the historical trade routes that the BRI aims to revitalize, enhancing connectivity and development across regions. Furthermore, in the following topic, India once again refuses to take part in BRF 2019. Additionally, the "BRI Partners" topic signifies the expansion of BRI projects to nations like Malaysia and Indonesia.

The emergence of Tweets related to the "debt trap" during the second Belt and Road Forum (BRF) reflects a more critical perspective, in contrast to the predominantly neutral and positive opinions expressed during the first BRF in 2017. The topic "BRI and debt trap" (Topic 1.2) suggests that there are growing concerns and discussions among Twitter users surrounding China's BRI and its potential to lead to a conspiracy theory of unsustainable debt burdens for the countries involved. (Sautman & Hairong, 2019). This shift in sentiment highlights a heightened awareness and scrutiny of the financial and economic implications of the BRI, especially in terms of debt sustainability.

In analyzing the dataset, it's evident that Twitter played a pivotal role in shaping discussions and perceptions around the BRI, Twitter users actively engaged in conversations related to the BRI, offering a diverse range of opinions and viewpoints. Twitter discussions reflected the multifaceted nature of the BRI. Topics spanned BRI events, features, partners, and criticism, showcasing the initiative's broad scope and global significance. The transition from predominantly positive and neutral sentiments during the first Belt and Road Forum in 2017 to more critical discussions during the second forum in 2019 demonstrates an evolving perspective. In particular, the emergence of the "debt trap" narrative highlights growing concerns about the economic implications of the BRI. Overall, Twitter serves as a dynamic and influential space for digital diplomacy during BRI events. It enables real-time discussions, captures public sentiment, and provides insights into the concerns and interests of the global community.

4.3. What are the common reactions of Twitter's users to the BRI?

Figure 7: The average of sentiment polarity by year and month around the BRI tweets.



Source: Own Combination from the dataset by Chun-Yin Man, David A. Palmer & Junxi Qian (2021). The Belt and Road Initiative on Twitter: An annotated dataset

The line chart depicts the monthly average sentiment polarity of BRI-related Twitter posts spanning from September 2013 to November 2021. In general, these posts exhibit a consistently positive sentiment throughout the observed time frame. At the outset of the data collection period, the average sentiment of BRI tweets displayed fluctuations within the range of 0.08 to 0.21. However,

there was a sudden and pronounced decline to -0.08 in October 2014. Interestingly, October 2014 was the establishment of the Asian Infrastructure Investment Bank (AIIB), and was headed by China. Subsequently, the average sentiment rebounded in the following month, reaching 0.11, and then remained in the range of 0.11 to 0.16 before reaching another peak in March 2016, achieving a sentiment score of 0.21. On March 28, 2016, Chinese President Xi Jinping's visit to the Czech Republic inaugurated a three-day state visit. This visit marked the beginning of substantial collaboration opportunities between the two nations, largely facilitated by BRI. A closer examination of original Tweets from that day reaffirms that the positive response was primarily a result of this meeting. In the subsequent three years, from 2017 to 2019, in tandem with the development of BRI projects, the sentiment of Twitter users remained consistently positive. However, it wasn't until 2020, with the outbreak of the COVID-19 pandemic, that China's public image suffered a decline, leading to a decrease in the average sentiment polarity of BRI-related Tweets. Although Twitter posts still retained a positive tone, the sentiment was notably lower than previously recorded, for instance, scoring as low as 0.02 in March and April 2020. The score of average sentiment of BRI-related posts reached at 0.14 points at the end of the research period in November 2021.

Table 3: Number of Tweets generated by influential China-related users

Users	Number of Tweets
China State-affiliated media	91,796
China Government officials	15,893
China Government organizations	6,783
State Authorities	1,307

Source: Own Combination from the dataset by Chun-Yin Man, David A. Palmer & Junxi Qian (2021). The Belt and Road Initiative on Twitter: An annotated dataset

In order to understand the reason behind the positive response of Tweets, the paper also looks into Chinese accounts that generated a significant number of BRI-related Tweets. First of all, China State-affiliated Media, with the highest number of tweets (91,796 tweets), likely includes official media outlets or news agencies associated with the Chinese government. They play a crucial role

in shaping public opinion and disseminating information both domestically and internationally. Their substantial tweet volume suggests a consistent and extensive presence on social media, which can influence the narrative and sentiment on the Twittersphere. Secondly, Chinese government Officials comprising high-ranking government officials such as politicians and diplomats tweeted 15,893 times during the research period. Their tweets hold considerable weight in terms of policy announcements, diplomatic relations, and official statements. While the number of tweets is notably lower than state-affiliated media, the content shared by government officials can have a profound impact (Su & Xu, 2015). Government organizations also play a significant contributor as they use Twitter to convey information, updates, and policies related to BRI. Last but not least, state authorities including regional or local government also follow China's digital diplomacy in spreading China's narratives.

In conclusion, Twitter has served as a platform for both shaping and reflecting the sentiment around the BRI. Overall, Twitter users have positive reactions to BRI on Twittersphere. The engagement of influential China-related users on Twitter played a crucial role in shaping the narrative and sentiment around the BRI. The analysis of sentiment trends and the involvement of influential users explain the dynamic nature of digital diplomacy and the importance of social media in shaping global perceptions of major international initiatives like the Belt and Road Initiative.

5. DISCUSSION

On the one hand, the increasing coverage of BRI-related posts on Twitter has proven that China is successfully making digital diplomacy efforts throughout the development of BRI projects. Although the level of engagement was relatively low at the beginning of the research period, with constant digital diplomacy efforts as well as the development of the BRI projects, China successfully gained attention from the online public and promoted BRI. Given the fact that Twitter is the most prominent Western social media with a high reach of audience, China is spreading its stories and updates on BRI to a wider range of international publics. These narratives, often characterized as "stories with Chinese characteristics," have left a positive mark on the Twittersphere due to the high volume of Tweets coming from China. Indeed, Chinese politicians, diplomats, journalists, and various organizations have played a pivotal role in disseminating these positive narratives, aligning with China's commitment to portraying a favorable image. Besides Chinese officials and state organizations, followers or ordinary Twitters also play a crucial role in

shaping China's overall image. Twitter users, if perceive BRI in a positive way, would be more authentic and trustworthy than what Chinese actors might achieve. It is worth noticing that the overall positive reactions collected in this paper contrast with the findings given by previous research by Nwana and Seoane, which were also conducted this year. This difference could be attributed to the fact that Nwana focused solely on Indonesian reactions to the BRI, and Seoane conducted research during the 2019 and 2020 period when China's image was negatively affected by the COVID-19 pandemic and its "Wolf-Warrior Diplomacy."

In addition, it's essential to acknowledge that despite China's efforts to promote positive stories about the BRI, challenges persist in engaging with Western audiences. The dissemination of such narratives is met with skepticism, as they are perceived to be state-controlled and potentially serving as propaganda tools, which has been discussed by d'Hooghe in 2005. In this context, China faces the ongoing task of addressing these concerns and fostering transparent and credible communication about the BRI to bridge the gap with the Western public.

Leveraging the BRF, China seizes the opportunity to amplify the volume of tweets during these significant events, often sharing positive content related to development, investment, and partner projects. These events provide a platform for promoting the positive aspects and achievements of the BRI. The first BRF, held in 2017, witnessed a surge in tweets that largely conveyed optimism and enthusiasm about the initiative. However, as the BRI projects progress and evolve, they have increasingly become subjects of criticism and scrutiny. The second BRF in 2019 saw a notable shift in sentiment on Twitter, with more critical discussions emerging. This evolution in public sentiment reflects a growing awareness of potential challenges, concerns, and controversies related to the BRI. These changes in Twitter conversations highlight the dynamic nature of the BRI's online presence. While initial discussions were dominated by positive narratives, as the BRI matures and expands, it faces more diverse opinions and critical viewpoints. This includes discussions on issues like debt sustainability, transparency, environmental impact, and geopolitical implications. The increased criticism observed in the second forum suggests that the BRI's online discourse has become more nuanced and reflective of a broader range of perspectives.

6. IMPLICATIONS

The study offers insights into how countries, particularly China, use digital platforms like Twitter to engage with global audiences on a specific topic such as BRI. For Twitter users and the general

public, these findings offer a nuanced perspective on how the initiative is perceived and how China conducts its digital diplomacy. Recognizing the impact of authentic and influential tweets, Twitter users have the collective power to shape public opinion. They can utilize tactics like hashtags to drive real-world change, making the study's insights a crucial asset in this endeavor. Moreover, this understanding holds significance for governments, diplomats, and international organizations aiming to bolster their public diplomacy strategies. Through an examination of China's digital diplomacy efficacy, particularly in promoting the BRI, policymakers and diplomats gain insights into the strengths and weaknesses of their online engagement efforts. This informed perspective allows them to fine-tune their public diplomacy approaches. By delving into the geographical distribution of tweets, policymakers can pinpoint the regions generating a significant volume of BRI-related content, discerning areas of concern, and identifying potential opposition to the initiative. Furthermore, the study underscores the dynamic nature of public opinion regarding international initiatives like the BRI. This evolving sentiment can significantly impact the willingness of countries, organizations, and individuals to engage with or endorse such initiatives. Additionally, the analysis of key topics reveals the prevailing areas of interest and concern within the online public sphere. This, in turn, equips China with the tools to actively manage the narrative and effectively address apprehensions and criticisms related to the BRI.

7. LIMITATIONS AND SUGGESTIONS

The dataset used in this paper is undoubtedly valuable; however, it comes with several limitations that need to be acknowledged and considered. Given the wide timespan covered by the data, it is important to recognize that the landscape of digital diplomacy and public perception can change over time. It's possible that the data may not fully capture the most recent developments and shifts in public opinion. Moreover, despite the efficiency of topic modeling as a method to identify a large number of tweets, it would be beneficial to take a closer look at the original posts to interpret the results more accurately. Twitter posts can be multifaceted, often including images, videos, links, and short clips in addition to the text. These elements can significantly influence the meaning and sentiment of the tweets and retweets, therefore, a more in-depth analysis of the content within tweets would provide a more comprehensive understanding. In addition, analyzing BRI-related topics during the two forums may not cover the entire spectrum of discourse surrounding the Belt and Road Initiative. Public perception and discussions about BRI can occur outside of these specific events, and a broader data collection approach might be necessary to capture the full range

of conversations. To overcome this limitation, future research could consider employing additional data collection methods such as focus group interviews and questionnaires. These approaches would provide deeper insights into Twitter users' perceptions, allowing for a more comprehensive and nuanced analysis of digital diplomacy and public sentiment regarding the Belt and Road Initiative.

8. CONCLUSION

The study investigates the frequency and geographic allocation of BRI-related tweets and retweets on Twitter within a timeframe from September-2013 and 30-November-2021. While not achieving exceptionally high levels of popularity, Chinese efforts on Twitter regarding BRI have been successful in continuously producing BRI-related content. Furthermore, these initiatives have effectively stimulated users from diverse regions worldwide to participate in discussions and express their critical ideas on BRI-related subjects. This indicates a consistent and worldwide interest in the BRI and a significant level of interaction and discourse about the initiative on the platform. Secondly, by analyzing hashtags and applying topic modeling in 2017 and 2019 BRF, the paper also shed light on primary topics revolving around BRI. These hashtags indicate a keen interest in the initiative's economic implications; and its potential impact on global trade and finance. Also, the hashtags emphasize geographical and infrastructural elements. Along with positive topics, there are still many Twitter users expressing their critical opinion on the challenges and concerns of BRI such as debt trap and trade war. Thirdly, the sentiment polarity analysis provide deeper understanding on the perception of Twitter users. The transition from predominantly positive and neutral sentiments during the first Belt and Road Forum in 2017 to more critical discussions during the second forum in 2019 demonstrates an evolving perception of Twitter users. Overall, Twitter users express favorable responses to the Belt and Road Initiative on this online platform. The engagement of influential China-related users on Twitter played a crucial role in shaping the narrative and sentiment around the BRI. Analyzing sentiment trends and the engagement of influential users highlights the dynamic character of digital diplomacy and underscores the vital role of social

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APPENDIX

CODING/SCRIPTS:

Load necessary libraries

```
library(tm)
```

```
library(text2vec)
```

```
library(topicmodels)
```

Specify the file path

```
file_path <- "C:/Users/Asus/Desktop/TDK data/Topicmodelling.txt"
```

Read the text file into a character vector

```
raw_text <- readLines(file_path)
```

Tokenization and Lowercasing

```
tokenized_text <- word_tokenizer(tolower(raw_text))
```

Remove Punctuation and Special Characters

```
tokenized_text <- tokenized_text[grep("[a-zA-Z]", tokenized_text)]
```

Load English stopwords

```
stopwords_list <- stopwords("en")
```

Remove Stopwords

```
filtered_text <- tokenized_text[!tokenized_text %in% stopwords_list]
```

Filter out empty documents

```
non_empty_docs <- lengths(tokenized_text) > 0
```

```
filtered_text <- filtered_text[non_empty_docs]
```

Create a document-term matrix as a sparse matrix using text2vec

```
vectorizer <- vocab_vectorizer(vocabulary = create_vocabulary(itoken(filtered_text))) dtm <-  
create_dtm(itoken(filtered_text), vectorizer)
```

Set the number of topics

```
num_topics <- 10
```

Run LDA model on the sparse matrix using topicmodels package

```
lda_model <- LDA(dtm, k = num_topics, method = "Gibbs")
```

Print the top terms for each topic

```
terms(lda_model, 10)
```