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Analyzing Country Images through Networks: Case of South Korea *

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As communication moves to social media, countries are losing control over what messages are being circulated about themselves. This article explores how South Korea's country image is reflected within this contemporary networked communication context. We argue that country images, defined as the perceptions of countries by foreign audiences, can be swayed not only by official actors engaging in public diplomacy and nation branding projects but by any internet user who contributes to a marketplace of images. Using a social listening platform, we captured all the tweets about South Korea sent from June 01, 2019 to Jan 31, 2020. Combining textual and network analyses, our study looked at the main actors, topics, and network structures that influence South Korea's country image on Twitter. Our findings suggest that there is no unified South Korean country image, rather diverse and relatively dispersed images. We further found that official actors had limited impact on the conversations surrounding South Korea due to their insular activities. Our methodology and findings contribute to the nascent body of empirical works in country image studies.

Keywords: South Korea, Country Images, Soft Power, Nation Branding, Public Diplomacy, Network Analysis, Topic Modelling, Twitter

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I. INTRODUCTION

When Anne-Marie Slaughter (2009, 94) stated that “we live in a networked world [...] [where] the measure of power is connectedness,” she was reflecting on how the changes in our society had started to impact international affairs. Indeed, the idea of networked worlds was not necessarily new in other disciplines. In communication studies, for instance, the works of Manuel Castells (1996) had already pushed networked understanding to mainstream interest. With the increasing popularity of social media platforms that enable users to connect with each other, the idea of networks is more ubiquitous than ever.

Consequently, we expand on the discussions of networks within the reflection of country image. Country image refers to people’s perceptions about a country based on what they think, know and feel about that country (Buhmann and Ingenhoff 2015). This is to say, individuals form their own opinions and perceptions about foreign countries (Anholt 2008) based on the messages they receive about these places (Kavaratzis 2004). The understanding of a networked world, within this context, urges us to look at how messages travel within these networks. A linear model of communication would have assumed that countries could transmit their messages to foreign publics directly. Yet, in a network-based understanding, there is need for a more nuanced analysis as we can no longer assume countries would be the only actors disseminating messages or messages directly reaching target audiences. In other words, we need to “[move] beyond dyadic ties” (Rowley 1997, 887) as official public diplomacy actors are not necessarily the primary actors in a relatively more horizontal network surrounding their country image.

In this article, we explore how actors interact with each other and how messages travel across relations in a network about South Korea (hereafter, Korea) on Twitter. Korea has been actively investing in assessing and measuring its reputation as well as managing how it is perceived by foreign audiences through nation branding and public diplomacy projects in the last two decades. We use Twitter because, in addition to its popularity as a social media platform, it has been observed as an important platform in international communication and digitalized diplomatic processes (Dodd and Collins 2017; Huang and Wang 2020; Sevin and Manor 2019). Moreover, the platform presents a unique opportunity to observe network formations while users disseminate messages and interact with each other.

The remainder of the article is structured in five sections. We first position our study within relevant literature and share background information on Korean public diplomacy. Second, we share our research questions, data gathering methods, and descriptive information on our network data. Third, we answer how Korea’s country image is reflected on English-language Twitter by discussing the role of

tweets and network positions. Next, we explain our findings and their implications for the practice of public diplomacy and nation branding. We conclude our study by highlighting areas for future research.

II. COUNTRY IMAGES

I. NETWORKS AND COMMUNICATION IN COUNTRY IMAGES

Most mainstream works in international relations scholarship on country reputation is concerned with its impact on interstate relations at the systemic level of analysis, often through political leaders' perception of other countries' reputation (Gilpin 1981; Khong 2019; Lupton 2020; Renshon 2017; Yarhi-Milo 2018). Since Joseph Nye's coining of the soft power concept (1990), a new wave of studies has emerged on countries' reputations as perceived by foreign public opinion (Anholt 2008; Ayhan 2019; Cull 2019; Manor and Pamment 2019). While these studies often failed to clarify "reputation for what trait or behavior, in the eyes of whom (naming the observers or reference group), and for whom (naming the target of the reputational inference)" (Dafoe, Renshon, and Huth 2014, 375), the main assumption was that countries benefit from more visibility, and foreign publics' more complex cognitive understanding of and favorable affection towards them (Pollack 1998; Wohlforth et al. 2018).

Country image and reputation are seen to emerge first and foremost within the sphere of a country's international public image on the subjective level, reputation as a public estimation, and both commonly conceptualized as attitudinal constructs (Buhmann and Ingenhoff 2015). We can define country image as an individual judgement made by a subjective behavior unit, while country reputation refers to the accumulated country image of a group, a public estimation by (generalized) others (Buhmann and Ingenhoff 2015). Linked to these constructs, two concepts gained traction, creating their own domains of research: nation branding and public diplomacy. As corporate brand analyses and strategies have been applied to places including countries (Anholt 1998), scholars entertained the idea of nation branding. These brands are based on people's mediated or direct communication or experiences with the country and which, in turn, affects people's behavior related to that country. Public diplomacy is the process of building relationships and listening to relevant actors (Cull 2019) in order to avoid conflicts, achieve foreign policy goals and advance national interests (Sevin 2017) with the aim of enhancing the country's image. Nation branding and public diplomacy are long-term processes attempting to influence the perception of target audiences. Yet, despite actors' intentional efforts to brand their nation, all they can do is to introduce an image to the marketplace of images (Ayhan

2019). These communication strategies aim to increase the odds of preferred outcomes occurring (Zaharna, Arsenault, and Fisher 2013).

Traditionally, mass media has been vital to opinion formation (McCombs 2014), and governments have been the major – if not the sole – producer of information on major issues related to them (Castells 1996). The information was flowing from governments to audiences. While mass media and vertical forms of communication are still important, in the age of networks, country image cannot be limited to crafted messages as social media platforms, including Twitter, have grown into major arenas where official accounts project deliberate images of their countries and build or manage relationships attempting to control and steer discussions about their country, thereby managing their brands. These platforms facilitate the creation of horizontal networks that connect various individuals and official actors in interactive communication surrounding different topics (Castells 1996), in our case Korea. Countries are not the sole producers of information and might not even be major players. Other actors, such as individuals, organizations, and corporations, can hold more influential positions in networks. In this paper, rather than the sources of country image formation, we focus on its outcome, that is the country image as it is reflected in the public sphere. In the next section, we provide a short description of Korean attempts within this policy environment, followed by our research questions to explore Korea's country images.

2. BACKGROUND ON KOREAN PUBLIC DIPLOMACY

Public diplomacy has always been important for Korea, although the official policy carrying this title was introduced only recently in 2010. The main messages and aims of Korean public diplomacy changed as the country transformed from a newly independent state and one of the poorest countries in 1948 to an advanced country in most major indices by the late 2010s. Previously, Korean public diplomacy aimed to make the country internationally visible and recognized; compete its narratives against North Korean ones for legitimacy; and ensure the US' commitment to the Korea-US alliance (Lee 2019). The end of the Cold War and Korea's successful economic development brought the country to a more central place in world affairs, encouraging a more omnidirectional diplomacy as a middle power. Particularly, the Lee Myung-Bak (2008-2013) administration brought public diplomacy to the forefront of Korean diplomacy as a third pillar of its strategy along with political and economic affairs (Ministry of Foreign Affairs 2020). Since then, consecutive Korean governments emphasized public diplomacy more, increasing its budget exponentially and widening its scope. The main thrust of the public diplomacy objectives has consistently been "improving the Republic of Korea's image in the international community," which is also pronounced in Korean Public Diplomacy Act's Article 1 (Purpose) (Gukga Bōb Jongbo Sentō

2016).

Since the Lee Myung-Bak administration, Korea has paid close attention to international public opinion polls and country image indices to figure out where the country's image stands in the international community. While international indices such as Anholt-GfK Roper Nation Brands Index and Soft Power 30 were frequently consulted, Korean government also created and briefly used its own nation brands index called NBDO together with Samsung Economic Research Institute in 2010. Since 2018, Korean Culture and Information Service runs a yearly public opinion poll about Korea in 16 countries.

Previous studies on Korea's country image often used surveys to find connection between the country image and intention to purchase Korean products (Ha and Hwang 2014; Lee and Robb 2016; 2019; Lkhaasuren et al. 2018; Shin 2006), brand equity of Korean products (Lee and Li 2011; Woo 2019), Korean Wave (Han and Lee 2008; Kim, Kim and Park 2018), or travel intention to Korea (Lim, Lee and Ha 2013; Philips, Asperin and Wolfe 2013). Other studies used surveys to understand Korea's country image from the perspective of foreign workers (Kwon 2015), foreign students (Ayhan and Gouda in press; Kim and Park 2020; Varpahovskis and Ayhan 2020; Yun 2014) or foreign travelers (Hwang, Asif and Lee 2020; Lim and Lee 2012). A fewer number of studies conducted news analyses to assess how Korea's image is reflected in foreign media (Lee 2010; Shin 2014). Studies that look at how Korea's image is reflected on social networking sites are even rarer to find. Park and her colleagues (Park and Lim 2014; Park, Chung and Park 2019) analyzed Korea's official public diplomats' strategies on Facebook to deliver their messages and engage with foreign publics. Lee and Kim (2020) analyze Twitter and Instagram posts to analyze public sentiment regarding South Korea's response to COVID-19. To our knowledge, no study so far has analyzed how South Korea's country image is reflected on social media among all users, including ordinary active users, who are not mere consumers of this image but are also its producers. Furthermore, no study so far has attempted to position the official attempts to shape Korea's country image within a marketplace of images on digital platforms. Our study addresses these two gaps.

III. METHODOLOGY

We argue that there is a relationship between what countries say about themselves through nation branding and public diplomacy and how they are perceived by foreign audiences. Countries are not the only actors that disseminate messages about themselves. Audiences also have the option to create their own or to lend their support to the ones they choose. In this section, we present our

research questions, describe our data gathering and cleaning processes, and lastly provide descriptive measures on the network data we used to answer our research questions.

1. RESEARCH QUESTIONS

A network, in its essence, is a relational system characterized by actors and their social ties (Wasserman and Faust 1998). Thus, a study of networks focuses on actors and these ties, which focuses not only on ties among actors but the structure that is the result of all actors and their interactions. In our case, this network is composed of Twitter accounts. The ties between them are tweets. When a user retweets or replies to another user's tweet, or mentions another user in their own tweet, a link is built. The overall network shows all the interactions. Within this network, we are interested in Korea's country image:

RQ: How is Korea's image reflected on Twitter?

Answering this question requires us to look at two main components of a network, namely topics and relations. Twitter data allows us to examine what users think without a prompt (Boase 2016). We, therefore, look at which messages and topics are discussed within the network:

RQa: What are the most frequently discussed topics?

We then focus on the networked aspects of these topics, more specifically, we look at who leads the discussions about a country (Barberá et al., 2019). The structure of the network is not solely adding up bilateral ties. Rather, the amalgamation of these ties gives certain actors preferred positions in a network. For instance, centrally positioned actors in a certain modularity group or in the overall network are more likely to influence others, while those who bridge (Zaharna 2014) between different modularity groups can span structural (Burt 2002) or cultural (Pachucki & Breiger 2010) holes by facilitating information exchange and understanding among these different groups.

RQb: How do actors get strong positions in the network?

Within this sub-question, we look at overall network and official networks separately. Nation branding and public diplomacy studies underline the contributions of official actors to country images. There are organizations mandated to promote country images. Consequently, we seek to extract their activities within the over network (Barberá et al. 2019). Yet, as argued above, the official actors do not

have exclusive control of the messages. Rather, they provide their own views to a marketplace of images (Ayhan, 2019). Therefore, we also look at overall network to better explain this marketplace. In the next section, we explain how we collected data about this marketplace and describe the Twitter network surrounding Korean country image.

2. DATA GATHERING AND CLEANING

In order to create a network, we have collected tweets containing the keywords *skorea* or *korea* between June 1st, 2019 and January 30th, 2020 using a social media monitoring company, *Notified*. We chose the English search strings, first because English is the most used language on Twitter; and second, it is the main foreign language of Korean public diplomacy. Data was downloaded from Notified servers every Monday and Thursday throughout the research process. We captured the most recent data available and stopped data gathering at the end of January due to Covid-19, since the pandemic started to skew the dataset. Our initial dataset included 811,423 tweets sent by 437,521 accounts. Majority of these tweets (712,616, ~ 88%) contained an interaction with another user in the form of a retweet, reply, or a mention. In order to better answer our research questions focusing on sustained interactions and message disseminations, we cleaned the noise from the dataset. Our cleaning process removed irrelevant accounts and tweets, defined initially as low frequency and interaction. Since country images are formed over time, we included only the accounts that were active in four out of the eight months we covered in our analysis. We repeated the cleaning process until all accounts in the network were active in at least four months¹.

Our final dataset included 70,744 tweets, forming 122,507 ties (edges) among 7,774 users (nodes). Given our generic search keywords (Rui, Lui and Whinston, 2013), and our requirement for repeated interaction in country images, discarding around 90% of our initial dataset as irrelevant was not unexpected.

Network calculations and visualizations are carried out in *gephi* (Bastian, Heymann, and Jacomy 2009). Textual analyses and topic modeling are carried out in R, using respectively *tm* (Feinerer, Hornik, and Meyer 2008) and *topicmodels* (Grün and Hornik 2011) packages.

3. NETWORK DATA USED

Our final network, which included 122,507 edges among 7,774 nodes, constituted a sparse network, with a density of 0.002. On average, a node interacted with another around 16 times (Average Degree=15.759). Despite its sparsity of the overall network, we observed strong modularity groups. We

identified a total of 74 modularity groups in the network, with the largest five groups accounting for 90.5% of nodes. In other words, 7,035 nodes are included in five modularity groups whereas the remaining 739 nodes are divided into 69 groups. Figure 1 shows the overall network where each node is represented by a circle and each edge by a line. Node proximity shows modularity groups and node size show degree centrality.

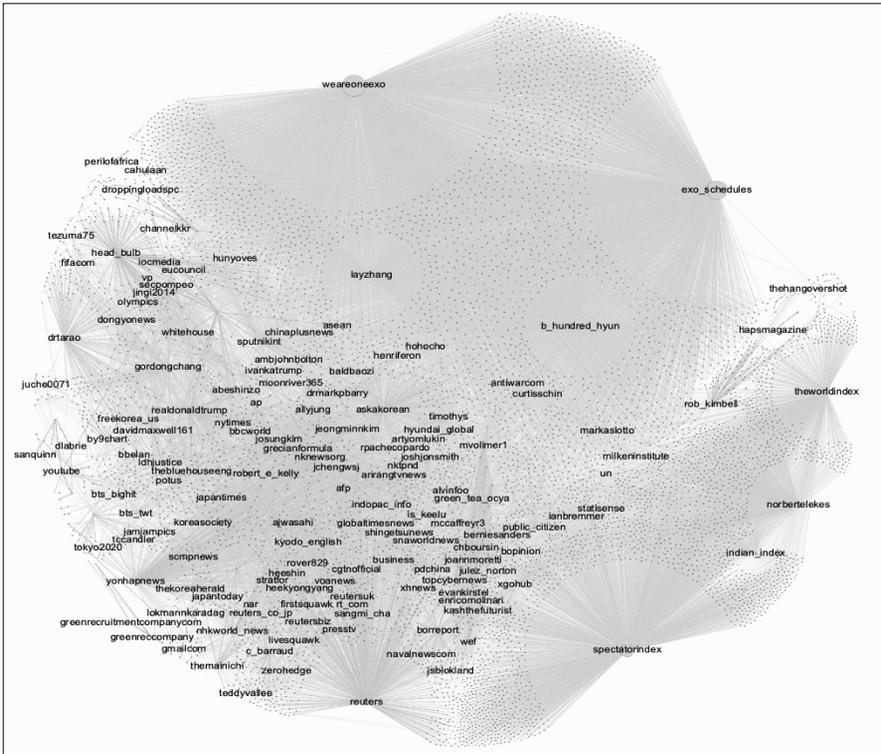


FIGURE 1. OVERALL NETWORK

Among the nodes with high degree centrality, we observed a mismatch between in-degree and out-degree scores. While degree centrality counts each and every interaction a node has, in-degree and out-degree differentiates between source and target (Wasserman and Faust 1998). If user A retweets content created by user B, it will be reflected in the degree count of both nodes but will be only in user A's out-degree and user B's in-degree count. The nodes with highest degree counts in the Korean network have all benefited from a high in-degree measure which was only minimally augmented by out-degree. A similar mismatch was observed in out-degree measures. Out of 10 nodes with the highest out-degree, four had an in-degree of 0, followed by two accounts with 1

and another two with 6.

The modularity groups were relatively insular. The intramodular edges constitute the majority of interactions, with 115,815 of the total 122,507 edges. The largest three groups have 95,212 edges, and the largest five have 105,584. The other 69 groups account for the remaining 10,231 edges. Only around 5% of all edges (6,692) were between different modes from different groups. The intermodular edges between the largest five groups accounts for 73% (4,885). The highest number of such interactions were between the groups located in upper left and lower right-hand sides of Figure 1, accounting for 1,670 out of these 4,885 edges.

The network includes 16 official accounts. Three of these accounts are international broadcasting accounts (*@arirangtvnews*, *@arirangworld*, *@yonhapnews*). Twelve are from governmental organizations (*@rokembdc*, *@koreantravel*, *@koreatourism*, *@mofa_kr*, *@mofa_kreng*, *@thebluehouseeng*, *@thebluehousekr*, *@rok_mnd*, *@kccuk*, *@kcc_ngr*, *@mofa_belgium*, *@motiekoreaeng*). The last one is President Moon Jae-in's official account (*@moonriver365*). There were no other personal accounts of government officials within the network. In other words, the majority of the nodes in our network were non-official.

In order to look at the performance of official nodes, we created a sub-network, shown in Figure 2, composed solely of the relationships that include the sixteen official accounts shaded by modularity groups. The network has 734 nodes that form 2,852 links between each other. There is an overlap between types of nodes and their modularity groups. Travel related accounts (*@koreatourism* and *@koreantravel*) are not connected with the rest of the network. Accounts from the Ministry of Foreign Affairs and the Office of the President form two other groups. Korean Cultural Centers are similarly one group. The overlap, however, is not perfect. *@thebluehousekr*, which belongs to the Office of the President, is together with the Ministry of Foreign Affairs accounts. *@rokembdc* is in the same modularity group with broadcasting accounts among other minor discrepancies.

In this network, there are only 25 outbound edges from official nodes – 25 times when an official node reached out to another one in the network. These edges come from three out of 16 official accounts, *@rokembdc*, *@kccuk*, and *@kcc_ngr*. Korean Culture Center in Nigeria's sole outbound edge is with *@arirangtvnews*. Its counterpart in the UK has a similar pattern, as its outbound edges end in official Korean broadcasting accounts, with the exception of a single edge connecting to *@reuters*. The embassy in Washington DC, on the other hand, has links to local think tanks, scholars interested in Korea, and US official entities.

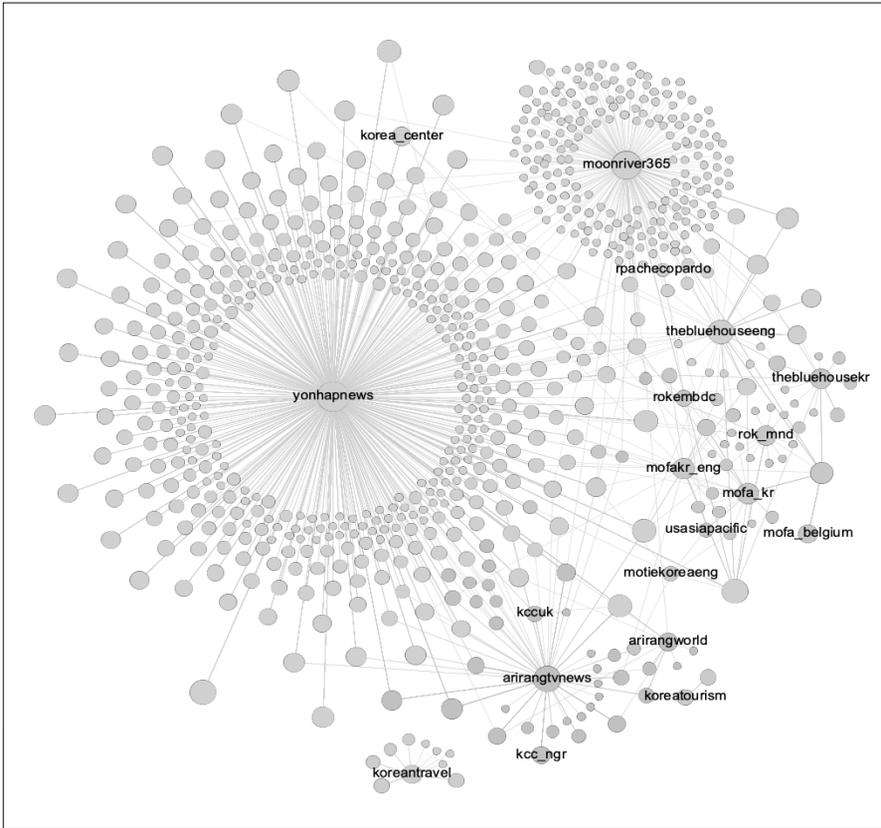


FIGURE 2. OFFICIAL ACTORS AND THEIR NETWORK

The inbound edges – instances in which non-official accounts interact with an official account, either through mentions or retweets – point to the dominance of mass media outlets. Yonhap News Agency accounts for 74% of the interactions, followed by the President Moon Jae-in with 11% and Arirang News with 5%. For President Moon, over half of his interactions were indirect in which journalists use his Twitter handle instead of his name. One such tweet, for instance, referred to the summit between *@realdonaldtrump* and *@moonriver365* as opposed to using the names of both presidents. This particular tweet was 171 out of 307 inbound edges. The broadcasting platforms, on the other hand, had their content retweeted. The average retweet for *@yonhapnews* ($n=1,074$) was 1.96 ($SD=1.67$) and for *@arirangtvnews* ($n=106$) 1.40 ($SD=0.63$). In other words, the different content created by broadcasting outlets got traction among other nodes. President Moon's presence was similarly due to his coverage by mass media.

IV. FINDINGS

We answer our main research question on the reflection of country image on Twitter for Korea (RQ) in two steps, guided by our two research sub-questions. First, we look at the tweets shared regarding Korea and describe the main topics (RQa). Second, we bring actors into the analysis to see the relative positions of actors within the overall structure (RQb).

1. TWEETS ON THE NETWORK

Our dataset has identified nearly 20,000 unique tweets and 4,500 unique hashtags used to discuss topics relevant to Korea. Parsing such a large textual data was facilitated through automated textual analysis tools, specifically through hashtag frequency analysis and topic modelling. Our findings indeed support the importance of this repetition aspect as we observed that discussions around Korea have been swayed by external events frequently. One such exogenous impact came from the 2020 United States Democratic Party presidential debates. Three candidates brought Korea into their discussions, Bernie Sanders in a tweet that contained several countries with universal healthcare; Kamala Harris in her comments about joint military exercises; and Joe Biden in his account of his foreign policy experience. Most of these conversations took place in late June, corresponding with the first debate and died off shortly after. Another impact came from what was then a relatively little-known virus. The coronavirus hashtag was observed only in January as relevant case data was retweeted by several nodes. Similarly, certain topics have received short term boosts. While #DonaldTrump has been actively used as a hashtag in seven out of eight months in our dataset, its frequency drastically increased when Trump visited Korea and met EXO in June 2019.

Table 1 shows the top 10 most frequently used hashtags by month and across the eight-month period. More often than not, we observe a relatively stable use, with K-Pop bands and regional politics dominating the conversation. We have seen the prominence of data-based tweets. In late August, Norbert Elekes (@norbertelekes), a self-described data storyteller, shared a tweet listing the world's largest CO2 emitters. Korea was included in the list, and it was shared with two hashtags, #amazon and #climatechange. The tweet was reshared more than three hundred times. In December, World Economic Forum, an international organization known for its short videos shared via social media, shared information about Seoul's move to install solar panels in the city. The video was retweeted and reshared around four hundred times, getting #energy and #environment into the list. While these short-term boosts change the conversation, their impacts are limited.

TABLE 1. FREQUENT HASHTAGS BY MONTH

June	July	August	September	October	November	December	January	All
#exo	#exo	#japan	#exo	#exo	#exo	#exo	#exo	#exo
#kpop	#japan	#northkorea	#kai	#smbaekkai	#smbaekkai	#japan	#smbaekkai	#southkorea
#northkorea	#mgmavote	#moonjaein	#baekhyun	#superbaekhyunkai	#superbaekhyunkai	#china	#superbaekhyunkai	#smbaekkai
#moonjaein	#northkorea	#china	#smbaekkai	#southkorea	#japan	#northkorea	#southkorea	#superbaekhyunkai
#donaldrump	#moonjaein	#asia	#superbaekhyunkai	#baekhyun	#china	#moonjaein	#chanyeol	#japan
#dmz	#sechan	#amazon	#weareoneexo	#kai	#northkorea	#asia	#weareoneexo	#kai
#trump	#asia	#economy	#exol	#japan	#ai	#india	#sm	#northkorea
#china	#china	#climatechange	#exoplanet	#northkorea	#india	#energy	#coronavirus	#moonjaein
#seoul	#tokyo	#tokyo	#miglobal	#moonjaein	#innovation	#tokyo	#japan	#baekhyun
#japan	#taiwan	#korea	#japan	#japaneserising gsun	#moonjaein	#environment	#moonjaein	#china

In addition to hashtag frequency analysis, we carried out a topic modelling analysis to classify texts (Silge and Robinson 2017). By employing Latent Dirichlet Allocation (LDA), a specific topic modeling algorithm, each tweet was identified as being a mixture of topics, and each topic as a mixture of words (Silge and Robinson 2017). The analysis requires the researchers to predetermine a number of topics and assign probabilities to each tweet belonging to each topic. After running the analysis with two through nine topics, we settled on having six topics which gave us the largest number of topics while avoiding overlaps. We went through the keywords assigned to topics and representative tweets to come up with topic labels as shown in Table 2. *Current News* includes a variety of articles written on Korea, ranging from culture to politics. *Regional Politics & Data* has tweets discussing the country's relations with its neighbors and data coming from *the World Index*, mostly on Asian countries. *Security Politics* discusses relations with, mainly, North Korea and Japan. *Global Politics & Data* is about Korea's relationship with the rest of the world and data coming from *the Spectator Index*. The last two topics are on K-Pop. Despite the overlap, the last topic is exclusive to K-Pop group EXO as a band name, whereas *K-Pop* topic is inclusive of other K-Pop singers and bands. Current news articles were also dominated by articles on EXO and other K-Pop contents.

TABLE 2. NUMBER OF EDGES BY TOPIC

Topics	Total
Current News (Mixed)	18204
Regional Politics & Data	11819
Security Politics	27981
Global Politics & Data	17849
K-Pop	17974
EXO-Only K-Pop	28680

Looking at the content of tweets, we have observed the continuity in Korea's country image as reflected on Twitter. Across the eight months, topics and hashtags stayed consistent. In the case of Korea, K-Pop dominated the conversation, followed by security and global politics. Exogenous impacts, such as the onset of a global pandemic or a visit by a foreign dignitary, introduced new topics and hashtags, helping audiences discover new aspects of the country's image. Yet, such impacts were relatively temporary. This finding hints us that the overall conversation surrounding a country image does not change in a short span of time. In the next section, we are combining our node and edge analyses to discuss the relationship between tweets and positions in the network.

2. POSITIONS IN NETWORKS

Our network is composed of actors (nodes) and relations (edges) in between them. Our analysis of nodes included not only social network analysis measures but also their categorization as official and non-official accounts. Relations, on the other hand, were tweets. In this section, we analyze which nodes and which tweets, or what type of combination, pushes them to influential positions.

We propose our operationalization of influence by contextualizing network analysis measures within public diplomacy frameworks. Influence, in its nature, is about behavior. We argue getting retweeted is a sign of influence (Kim, Sung, and Kang 2014), both because the actor's tweet causes another user to act and because the message of a given actor gets re-disseminated. Therefore, degree centrality should be included in the calculations. In our network, K-Pop relevant tweets – especially those announcing musician or tour-related news – have been widely retweeted. However, these tweets are coming from accounts that broadcast such information and are limited in their outreach. As argued above, an influential public diplomacy actor should build meaningful relationships. Thus, we cannot label such accounts as influential in country images. To remove these one-way accounts, we first calculate a degree deficit, which is the absolute value of the difference between in- and out-degree measures. We focused on the nodes with the lowest deficit (bottom 25%) and highest degree centrality (top 25%). Last, we introduced betweenness centrality (keeping top 25%) into our operationalization, a measure that looks at how often a node connects different groups (Wasserman and Faust 1998), since an influential public diplomacy should be able to build relations (Zaharna 2014). Our final 44 nodes included only one official account, the Korean Embassy in Washington, DC (@rokembdc). The rest of the accounts mainly belonged to journalists, and academics as well as media outlets and research centers. It should be noted that the majority of these nodes came from three of the top five modularity groups, while none belonged to K-Pop-related accounts.

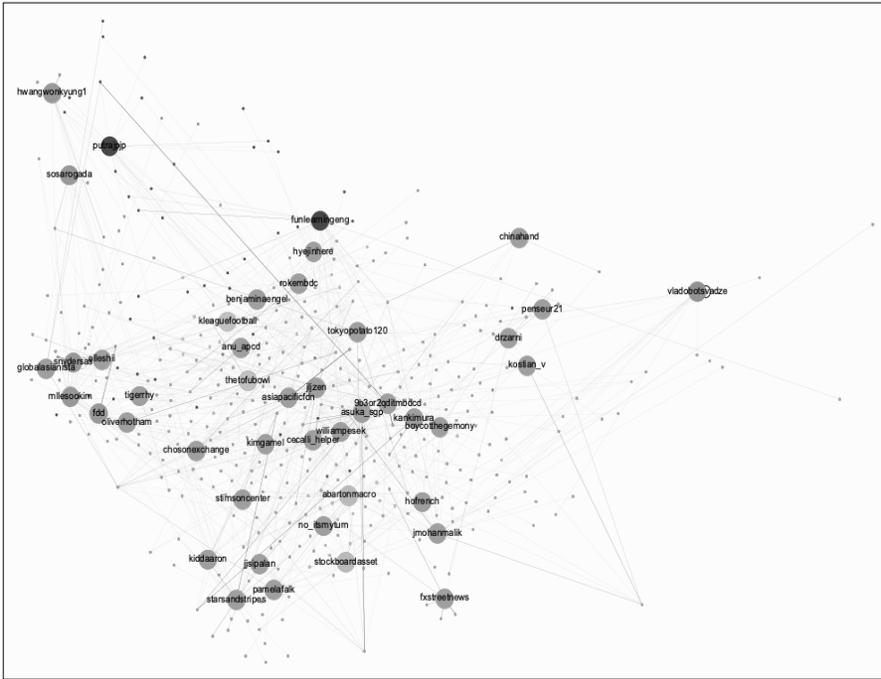


FIGURE 3. NETWORK OF TOP 44 ACTORS

The quantitative indicators of the accounts show relatively modest usage patterns. The average following number is less than 3,500, with a median of a little over 1,000 (respectively 3,438.46 and 1,096). These accounts have a total of 1,042 relations, 121 taking place among them and 921 with other actors in the network. As shown in Figure 3, their network is not necessarily extensive or dense but their relative positions in the network help them punch above their weight.

The accounts in the official network were discussing considerably different combinations of topics (as shown in Table 3). As mentioned in the previous sections, there were no edges belonging to either K-Pop topic. Security politics dominated the conversation, with specific hashtags such as #ARF (ASEAN Regional Forum), #GSOMIA (General Security of Military Information Agreement), and #GlobalEconomicSecurity (part of the outcomes of The 4th U.S.-Korea Senior Economic Dialogue) being popular.

TABLE 3. TOPICS IN OVERALL AND OFFICIAL NETWORK

Topics	Overall Network	Official Network
Current News (Mixed)	18204	390
Regional Politics & Data	11819	151
Security Politics	27981	2310
Global Politics & Data	17849	5
K-Pop	17974	0
EXO Only K-Pop	28680	0

The Korean official accounts have been relatively missing from the conversation. Thus, we revisited our initial dataset of all tweets to better understand how they might have performed. Our dataset of 811,423 tweets had a total of 1,977 tweets coming from these 16 actors, the majority of which (1,924) were from the three media outlets. In other words, the official accounts on average have 177.6 tweets ($SD=388.07$) in the dataset. Removing the three media outlets, the remaining thirteen accounts still average 4.08 tweets ($SD=8.1$). This figure is well above the average volume of the entire dataset, which is around 1.86 tweets per account. Only 29 out of nearly 2,000 tweets had any interaction with others, coming from only five of the accounts. Eventually, despite their comparative advantage in broadcasting messages, the lack of interaction pushed the official accounts to relatively less prominent positions. Even within the official network (see Figure 2), the 16 accounts did not bridge the holes among different groups. Rather, Korea-related foreign departments or centers such as @USAsiaPacific (US State Department Bureau of East Asian and Pacific Affairs) @korea_center (The Wilson Center's Hyundai Motor-Korea Foundation Center for Korean History & Public Policy), and @rpachecopardo (The KF-VUB Korea Chair at the Institute for European Studies) were the bridges spanning structural holes in the network. In other words, it was not the official Korean accounts but other accounts with a vested interest in Korea that connected different groups.

The list of influential actors also portrays a similar picture. Introducing different aspects of country image enables accounts to span structural holes. Looking at the content of the tweets sent by top 44 accounts, we observe a wide variety of topics. Even though they have been fundamentally classified as politics and data, there are references to Korean economy, education, sports, social issues, and military. The tension with Japan was also widely discussed, including by two currently defunct accounts. Given the depth and breadth of tensions between Japan and Korea, there are tweets discussing trade wars, history, military intelligence, and even Tokyo Olympic Games.

In the light of these observations, we carried out an additional hashtag frequency analysis by looking at intermodal and intramodal edges. The former

looks at hashtags used when nodes interact beyond their modularity group and the latter within the same group. Table 4 compares the top 10 most frequently used hashtags in intermodular and intramodular edges.

TABLE 4. FREQUENT HASHTAGS WITHIN AND ACROSS MODULARITY GROUPS

Intermodular	Rank in Intramodular	Intramodular	Rank in Intermodular
#japan	4	#exo	5
#northkorea	6	#smbaekkai	147
#china	9	#superbaekhyunkai	148
#moonjaein	8	#japan	1
#exo	1	#kai	125
#kpop	12	#northkorea	2
#us	29	#baekhyun	206
#dmz	81	#moonjaein	4
#india	26	#china	3
#seoul	27	#asia	23

There are indeed overlaps between these two groups. Yet, there are two important divergences, shown in bold. First, hashtags that signal political news, such as those referring to other countries, are ranked higher, with #dmz (Korean Demilitarized Zone) jumping 73 spots in intermodular edges. On the other hand, while we see EXO and K-pop in intermodular edges, more specific K-Pop hashtags are ranked lower.

TABLE 5. TOPICS PER EDGE GROUPS

Topics	Intermodular	Intramodular	Total
Current News (Mixed)	1320	16884	18204
Regional Politics & Data	1023	10796	11819
Security Politics	3405	24576	27981
Global Politics & Data	903	16946	17849
K-Pop	25	17949	17974
EXO-only K-Pop	16	28664	28680

We further looked at the topics in intermodular and intramodular links (see Table 5). *Security Politics* and *K-Pop* dominate the conversation on Twitter. Despite the popularity of the topic, *K-Pop* does not move the conversation beyond its modular groups whereas security politics does. *Regional Politics* has the lowest volume in intramodular and total. This, however, might also be caused by two relevant topics: both *Current News* and *Security Politics* overlap with this particular topic.

V. DISCUSSION

While the network surrounding Korea's country image was relatively sparse, it provided an opportunity to study actors, tweets, and structure. First, we answered the "who" question by looking at influential nodes in the network. Operationalizing influence was as challenging as conceptualizing the term. Moving beyond a popularity contest, we operationalized the concept within public diplomacy context, looking for actors that are building mutually beneficial relationships with others, rather than broadcasting messages. Our list of 44 influential nodes included journalists and academics, as well as the media outlets and research centers. Although these are not necessarily the only audiences of public diplomacy messages, their key positions mean that they can be leveraged to disseminate official messages further.

We also looked at 16 official accounts which, with one major exception, had low levels of interaction with the rest of the network. Regardless of the reasons for this particular performance, such an absence means a lack of influence. It is not possible to change the course of conversations if one is not party to them. Even in the cases where these actors were active, we have seen a divided approach. The actors stayed within their own modularity groups. Media outlets, the only type of official accounts with above average performance, have been using the platform to broadcast messages rather than to build relationships. The Korean Embassy in Washington, DC (*@rokembdc*) was an anomaly in this group of 44 as it was the only official actor identified. This embassy is the first and one of few Korean embassies with dedicated public diplomacy personnel. Korean Embassy *@rokembdc* also has fewer tweets, following and follower numbers, and a shorter tenure on Twitter than the average. This performance can be explained by multifarious posts. The embassy covers a variety of topics, retweets relevant articles from diverse resources, and tags other accounts involved in the process including the authors of articles. In short, official accounts have been digital placeholders but they did not actively engage in relationship-building.

Since messages contribute to the image formation process, we also looked at what topics were discussed in the network. The hashtag frequency analysis revealed that the topics did not necessarily change across time. High profile events, or lack thereof, might introduce considerable changes in volume yet not across time. Even a meeting with the most popular people in the network, EXO, gave solely a temporary boost to a visiting head of state. There were, unsurprisingly, parallels between topics and modularity groups. We say unsurprisingly because sharing a tweet creates relations among nodes. Our methodological choices, including the number of topics used in the topic modeling, partially caused a complete overlap. As shown in Tables 4 and 5, culture – within this particular

context, K-Pop – did not spill over. Individuals interested in K-Pop were not interested in any other issue and vice-versa. Moreover, K-Pop tweets did not create any intermodular links either.

For positions within the network, our study points out two variables through which countries can increase their prominence in the networks surrounding their images: versatility in topics and initiation in relationships. The key to success in networks is connectivity. A successful public diplomacy project can build mutually beneficial relations, helping an actor hold places in a network that connects otherwise unconnected parts. In order to do so, first there is a need to have a diverse set of topics. As observed on Twitter, interest groups focus on certain topics rather than an entire country – with the exception of academics and journalists, as two groups that can support official efforts. Second, being solely the recipient of such links is not enough. Actors should actively reach out to relevant groups, cultivate relationships, and keep communicating.

Succinctly stated, our results suggest that Korea's country image is rather diverse and relatively dispersed on Twitter. What made the overall network structure even more challenging for public diplomacy and nation branding activities were the relative insularity of subgroups. Five modularity groups accounted for the majority of the network, while virtually all edges were among the nodes belonging to the same groups. Ninety-three percent of the nodes had a betweenness centrality of 0, meaning that only 7% of the nodes actually connected different parts of the network. This observation posits two challenges to practitioners of public diplomacy. First, it is virtually impossible to penetrate an entire network through one entry point. Second, the messages have limited opportunities to get a life of their own. While retweets are rampant, they also stay within the same groups. There instead needs to be multiple actors working.

Our findings have significant implications for practitioners. Social media is significant not only as a platform where a country's image is reflected, but also increasingly as a platform where it is formed as people use it more often to get information including news (Shearer 2018). While public diplomats cannot control information, they can stay relevant to the conversations surrounding their country in an attempt to steer their country image. Platforms such as Twitter give public diplomats opportunities to interact with others in the network, including social media influencers, and build relations. However, our findings show that Korean official accounts' presence on Twitter is very limited, and their interaction with other nodes almost absent. A significant role these accounts can play on Twitter and other social media platforms is to span structural holes by bridging between unconnected modular groups. For example, K-Pop fans have their own bubble and rarely engage in other contents related to Korea. While much attention in Korean public diplomacy discourses is given to K-Pop, the interest in it seems to rarely move to other issue-areas. One way to take advantage of K-Pop

is to use it as a conversation starter to bring K-Pop fans into other Korea-related topics. Indeed, President Moon Jae-In's tweets on September 1, 2020 regarding BTS' achievement on topping the Billboard Hot 100 Songs Chart became his most popular tweets, winning him new BTS fan followers, who are more commonly and colloquially known as the BTS ARMY.

Korea recently created a Public Diplomacy Committee to better coordinate between different public diplomacy-related ministries and organizations. One of the tasks of this committee could be the better coordination of messages, interactions and bridging between different issues. Currently, it is only the Korean Embassy in Washington DC that brings together different issues and bridges between different modular groups. Better coordination can help Korean official accounts to be more influential in Korea-related networks on Twitter and potentially steer the conversation. This requires social media literacy and training that would have official accounts interact with others in this horizontal communication platform and build relationships, which is different from writing traditional one-way press releases.² Particularly considering the intensity of some controversial issues such as dog meat consumption, and Japanese claims in Korea-Japan disputes, official accounts' presence becomes vital from a public diplomacy perspective. Without presence in the marketplace, shaping the country image in a marketplace of images would not be possible.

VI. CONCLUSION

This study explained how country images are reflected on Twitter for Korea. The underlying assumption was as Twitter exemplifies a networked understanding in which various actors contribute to a marketplace of images, the link between country images and nation branding and/or public diplomacy activities was not going to be direct. We focused on Korea as an avid practitioner of nation branding and public diplomacy and analyzed a network surrounding a country image.

Our study was not without its limitations. First, the noise in our dataset presented a considerable challenge. We realized an exclusively quantitative approach or a reliance on mainstream measures were not going to be useful. We have provided our operationalizations for influence and methods for data cleaning; but eventually we were not able to use the entire dataset. Second, our network data was scraped from Twitter. Despite its widespread use among individuals and in digital diplomacy projects, Twitter is technically only one component of a larger marketplace of ideas about a given country. Last, we solely focused on the output – tweets – and did not investigate the reasons beyond these tweets or their outcomes and impacts. While this limited approach was useful to

answer our research questions, it fails short of answering causal questions in country image studies.

Further research in the field could incorporate four ideas to move beyond the limitations of our study. A repeated topic modelling study can be used to capture the noise and assess its impacts on the overall network. Second, additional data sources – including but not limited to other social media platforms, public opinion surveys, mass media, and word of mouth – can be introduced to provide a more inclusive picture of different venues through which audiences can learn about a country. Third, interviews with practitioners and with target audiences can help unpack the causal mechanisms in country image formation. Fourth, based on the operationalizations and findings provided in this paper, hypothesis-testing studies could be carried out to assess the impact of public diplomacy campaigns.

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ENDNOTES

- ¹ We have one exception to this rule. Our pre-analysis showed that there was a segment of highly active users dedicated to protesting dog meat consumption in Korea. Although this particular practice is no longer popular or mainstream in Korea, the protestors on Twitter were highly active. Their single-issue focused content and lack of interaction with the rest of the network made them redundant. We excluded all tweets that included identified users and hashtags relevant to dog meat consumption. We estimate that we removed around 80,000 interactions among over 1,000 users some of which satisfied our four-month active requirement.
- ² For more on organization culture and policy recommendations regarding public diplomacy in the digital sphere, see Robertson 2018.