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Capturing country images: a methodological approach

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ABSTRACT

Country images have been notoriously difficult to capture and measure effectively. In this article, we propose a methodological approach that combines designed and found data to capture public attitudes. We demonstrate how a mixed-method design with survey data and digital data – namely tweets and Google Trends – make it possible to better capture what target audiences think about a country. We make the case for such a combination by highlighting three aspects of country images. First, to understand what different types of public think about a country, we need to listen to different voices, and complement standardised public opinion survey data with open questions and digital data. Second, social media platforms are invaluable data resources as well as outlets that people on social media turn to for news and information. Last, digital data is unique and powerful, but difficult to analyse and interpret to create value for developing strategic communication policies. Public opinion survey data can help structure digital data and link both outcomes with each other. We support our methodological arguments through an illustrative study of the South Korean country image. We conclude our article by presenting a roadmap for multi-method analysis.

Introduction

Country image has been an important construct in international communication and public diplomacy. Even though it started gaining more scholarly attention in recent years (Gertner 2011; Lucarelli & Berg 2011), the concept of country image – crudely defined as overall public attitudes towards given countries – is not new. Walter Lippmann's (1922) seminal *Public Opinion* book touches on this understanding while discussing the relationship between the outside world and the pictures in our heads. The recent rise in its popularity is partially due to the changes in the behaviours of countries. Simon Anholt (1998), often named as the founder of studies on country

images, aptly stated that 'countries [were becoming] like factories, competing for the same broad consumers'. With the increased flow of goods and services across borders, countries found themselves facing new audience groups across the world. While initial studies have argued that countries should be careful about how foreign publics perceive them because such attitudes affect purchasing decisions towards goods and services they export (Andéhn & L'espoir Decosta 2018; Dinnie 2004), subsequent studies introduced further social, political, and cultural outcomes of country images (Rawnsley 2018; Sevin 2017; van Ham 2010).

Yet, unless the analyses of country images are methodologically sound, they cannot be relevant for policies. Officials need to analyse their country's images in order to be able to formulate their policy responses to shape or steer them. In this article, we ask how we can more inclusively measure country images. We answer this question by presenting a methodological approach that combines survey and digital data. Our aim is to augment survey data – a staple research method in public opinion and communication studies – with traces of digital behaviour – namely tweets sent by users on Twitter and Google Trends analysis. We further support our methodological arguments with examples based on an illustrative study of South Korean country image.

The rest of the paper is structured in four parts. First, we present an operationalisation of country images to highlight measurement challenges and build the theoretical basis for our proposed methodology. We present digital data as a partial solution for these challenges and explain how data coming from Twitter and Google Trends can enrich our explanation of country images. Second, we present the details of our methodology for our sample case by outlining our case selection and data gathering processes. Third, we detail how our proposed methodology delineates South Korean country image. We conclude the article by presenting a roadmap for combining survey and digital data in country image studies.

Country images: concepts, data sources, prioritisation

A country image is the subjective perceptions of a nation by foreign audiences (Ingenhoff and Chariatte 2020). When a country is named, a myriad of associations comes to mind. For instance, individuals might start thinking about a country's politics, or their experience with products or services originating from the country (Just 2016). Thus, the initial obstacle faced by scholars and practitioners in assessing country images is operationalisation: what do we need to measure when we measure country images?

The framework for analyzing country images in the following multi-mixed method will be the 5D model of country images. The 5D model has its origin in the 4D model (Buhmann & Ingenhoff 2015) and relates three basic theories: a) the theory of national identity by Smith (1987) to substantiate generic

attributes of the reference object which in our case is the country, b) the theory of reasoned action by Fishbein and Ajzen (1975) and Ajzen and Fishbein (1980), explaining that attitudes are formed from the cognitive beliefs and emotions about an object which in our case is a country, and c) the reputation model of Ingenhoff (2018) and Eisenegger and Imhof (2008) which serves as a framework for differentiating between multiple dimensions of the country image. Based on the 5D model, country image therefore is defined as a stakeholder's attitude towards a nation and its state, comprising specific beliefs as cognitive components in (i) a functional (economic and political competencies), (ii) a normative (values and integrity), (iii) a cultural (traditions, culture), and (iv) a natural dimension (landscape and natural beauty of a country), as well as (v) general feelings and fascination for a country in an emotional dimension (Ingenhoff 2017; Ingenhoff & Chariatte 2020). The 5D Model serves as an instrument to measure country images as a multitudinal construct and enables the integration and alignment of various data like survey data, media content data, social media or digital trace data. It allows to analyze which dimensions of the images are prevalent in generating affective responses in different channels and target groups. This operationalisation requires a way to capture how individuals articulate their opinions of and attitudes towards a place: where can we get data?

Surveys are the go-to data gathering tools in public opinion research, as researchers can design questionnaires to prompt respondents (Japec et al. 2015). By doing so, researchers can measure public opinion on any given topics, and not only those that can be found on digital platforms (Japec et al. 2015). Yet, the same point also means that findings might be skewed since respondents are prompted to think about a topic – or a country – that was not in their mind. Moreover, instances with short-term effects, such as hosting mega-events or leading foreign policy initiatives, might not last long enough to be captured by surveys (Whitman Cobb 2015). Survey data captures public opinion at certain intervals while country image is a dynamic concept.

Our search for timely and dynamic expressions of what people have in their minds, unsurprisingly, brought us to social media platforms where individuals can generate their own content and interact with others simultaneously (boyd & Ellison 2007). As several studies have shown, social media changed the media ecology by enabling users to freely generate content and build relationships (e.g., Sevin & Ingenhoff 2018; Ingenhoff, Calamai, & Sevin 2021). In a mass-media centric environment, countries have control over messages since they can employ traditional media platforms, such as television, radio, and newspapers, to disseminate their messages unilaterally (Gilboa 2000) whereas social media gives similar message dissemination capabilities to everyone. Earlier studies in country images gave countries almost an exclusive role in deciding what their image included (Szondi 2008) while audiences passively accepted the messages. Contemporary studies, on the other hand,

acknowledge the fact that there are various official and unofficial actors promoting their own views about a country's image (Ayhan 2019b). Official narratives can be undermined or overridden because of the contending narratives ordinary people provide to the world in real-time with only access to a phone, internet and social media (Seib 2012). In other words, a country image inherently includes a communicative interaction between these actors. The images are co-created as many actors interact with each other and their messages (Kavaratzis and Hatch 2019). While we propose using social media data and survey data to measure country images, we must acknowledge the abundance of data resources is not without its shortcomings. Researchers need to sort through all the available data to make sense of country images: How do we prioritise available data?

Prioritisation posed the third and last challenge as there is a myriad of available tools and techniques to gather data. Surveys have been and are being used widely to capture the perception of audiences. Anholt-GfK Nation Brands Index, one of the longest-running measurement indices, uses a multi-country online survey to measure and rank the perception of fifty countries across the world (GfK 2016). Social media data, such as tweets (Sevin 2014) and Instagram posts (Shafranskaya 2016), have been suggested to supplement survey data. However, as these social media datasets are not built for country image purposes, extracting information from them requires finesse. In measurement attempts, the challenge does not lie in articulating data gathering tools or identifying platforms that are 'found' (Japec et al. 2015) but rather in prioritising and combining these different resources to provide the most inclusive analysis. We propose relying on survey data to complement the shortcomings of and help prioritise the findings in digital data, as well as to identify how different dimensions of country image work together.

In this section, we presented our answers to operationalisation, data sources, and prioritisation questions which pave the way for our inclusive methodology proposal. Our operationalisation shows the shortcomings of survey data since it cannot capture all the dimensions, dynamic nature, and co-creation processes of country images. Our discussion on data sources argues that digital data can be used to supplement these textual and relational aspects even if they are imperfect. Our last argument, prioritisation, proposes bringing surveys and digital data together for a more inclusive picture. In the next section, we explain why we chose South Korea as a case study and how we gathered digital and survey data.

Illustrative case: studying South Korea

South Korea constitutes an intriguing and illustrative case for country image studies because of the changes it went through during the last few decades as well as its pronounced commitment to its image by consecutive governments

(Ayhan 2019a; Kang 2015). Once one of the least developed economies in the world, the country has managed to become a developed nation in a relatively short period of time, finding a place for itself at the top of most indices in the world including those focusing on gross domestic product (GDP), military power, technological advancement, and innovation. While South Korea managed to elevate its position in these indices in terms of material capabilities, several administrations diagnosed that there was a lag between how the country was perceived in the world with its growth in material capabilities (MOFAT 2006, 132). Understanding the importance of these images, the country made significant efforts for more visibility and recognition in the world by making explicit references to global studies on country images and public opinion polls (MCST 2013, 369). In 2010, the South Korean government created its own nation brand index (Lee 2012), which was discontinued after a government change in 2013. Since 2018, the Korean Culture and Information Service – an agency under the Ministry of Culture, Tourism, and Sports – started to conduct large-scale surveys regarding how foreigners perceive and evaluate the country (Kim and Kim 2019). In other words, South Korea felt the need to replace existing associations in individuals' minds with ones that better reflect the country's current reality. Consecutive South Korean administrations were convinced that a better country image in the world would provide the country with positive externalities in arenas like security, trade, and international politics, as it could help influence Korea's political surroundings (Ayhan 2019a; Chŏngwadae 2009).

Given the fact that the country has embraced activities to manage its country image, we situate our study as a prototypical case, assuming that the Korean practice is developing ideas and standards that are likely to be typical or at least considered typical by others in the future (Hague, Harrop, & McCormick 2019, 201).

Data gathering procedures

For our study on South Korean country image, we combined digital data with a multi-country survey study comprised of a standardised instrument to measure the South Korean image, combined with open survey questions on general associations towards the country and on the media sources from which the respondents receive news about a country. We used Twitter and Google Trends to gather our digital data. For our Twitter analysis, we used a social media monitoring platform, *Notified*, to gather all the tweets sent using the keywords 'korea' or 'skorea'. From June 1, 2019 to December 31, 2019, we collected 755,780 tweets originating from 401,433 unique users. We captured the most recent data available and stopped data gathering in January 2020 due to Covid-19, since the pandemic started to skew the dataset. We downloaded search data regarding South Korea from Google Trends for 2019 to account for people's self-initiated, voluntary, and unobtrusive interest in specific

topics (Zhu et al. 2012, june 14). Unlike a tweet or any other social media post that needs to have an associated account, a Google search can be done without one. These properties are less influenced by concerns regarding behavioural controls, such as perceived risks and expected benefits, that people might have when tweeting about a topic or answering a survey (Choi et al. 2019).

For our survey, we have used a previously tested public opinion survey instrument for the 5D Model (Ingenhoff & Chariatte 2020). The first part of the survey includes baseline questions on knowledge of the country. The second part presents 36 Likert-scale items measuring all five different dimensions of the country image. The third part has four closed-ended questions on the performance of South Korea. We employed *Bilendi* – a company that specialises in online panels for conducting multi-country surveys – to run the survey in the United States ($n = 1002$), France ($n = 1004$), Indonesia ($n = 1000$), and Japan ($n = 1000$) from July to August 2019. We selected these relatively large countries mainly to have diverse samples in terms of culture and geographical proximity to South Korea.

Data cleaning and analysis procedures

From the tweets collected, we created three separate datasets: hashtags, text, and relations. We had a total of 69,260 unique hashtags. We carried out frequency analyses and looked for co-occurrences of hashtags in the dataset. Our dataset included a total of 69,260 unique hashtags. From our text dataset, we carried out the same keyword frequency and pairing analyses with the hashtags dataset. The relations dataset was a dyadic list of users retweeting or mentioning others. We positioned these interactions as part of the image co-creation processes, as when users mention or retweet existing content they provide their own input and help the messages spread among their own networks. Consequently, in our analysis we looked at degree centrality measures – or how many times users have mentioned other users and/or have been mentioned by them – and modularity groups – or accounts that they have repeated interactions with.

We primarily used Google Trends data to complement, and less frequently to confirm Twitter data. Google Trends data give options of location (e.g., worldwide or a specific country), timeframe (e.g., days, custom range, years since 2004), categories (e.g., all categories, arts and entertainment, news) and search type (e.g., web search, news search, image search). Furthermore, Google Trends are less prone to prolific users who tend to set agendas by frequently posting on social media platforms.

From our survey data, we separated the data into two sections: answers to the open-ended questions and to the 36 Likert-scale items. For the former, we carried out a deductive content analysis using five country image dimensions. For the latter, we applied variance-based structural equation modelling with

partial least squares techniques (PLS-SEM) to analyse which country image dimension has the strongest impact on forming the affective components of South Korea's image, as this method has a more prognostic focus and allows to analyse which country image dimension has the strongest impact on forming the country image of South Korea, as well as identifying which key value drivers account for these effects (Hair, Hult, Ringle, & Sarstedt 2013).

In the next section, we present the preliminary results of our study of the South Korean country image, its co-creation process, and its value drivers. We should note that our primary objective is not to assess the success or failure of South Korean communication processes. Rather, our aim is to demonstrate our methodology.

Capturing country images: digital data and survey data

Our operationalisation sets country images as multidimensional constructs. These images change over time and are the results of co-creation processes. Following our proposed methodology, we initially start with digital data and show how it can be used to capture different dimensions and changes over time, as well as the relationship among actors. We then introduce survey data.

Country image dimensions

Open-ended answers are, technically, not unique to digital data and can be collected in surveys. Our survey included three open-ended questions where we
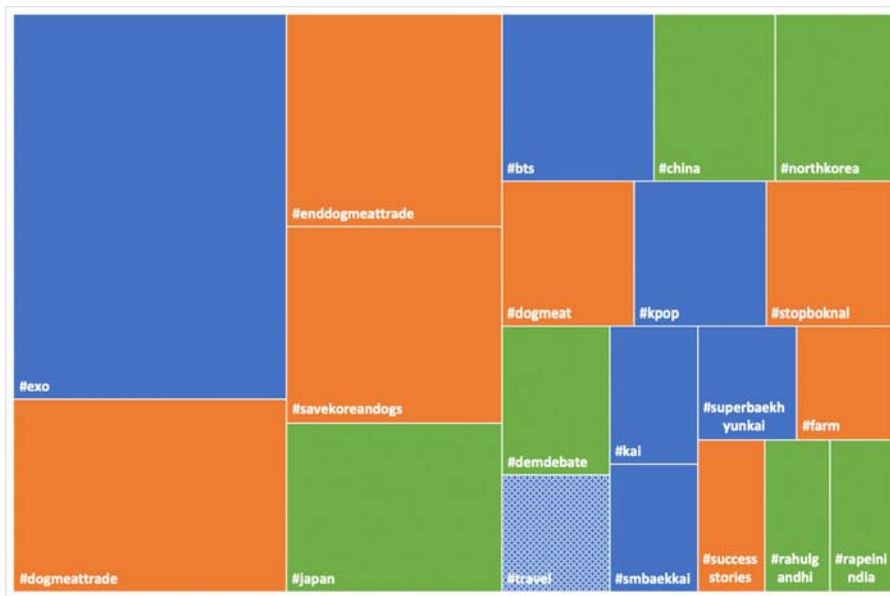

Figure 1. Top 20 Hashtags.

asked about Korea's strengths, weaknesses, and what news respondents can recall about Korea from the last two years, yet most frequent answers we have observed were 'nothing' or 'I don't know'. Focusing on unprompted responses, in other words our Twitter search, yielded richer data.

Initially, we focused on hashtags, used to describe and categorise tweets (Small 2011). Figure 1 shows the most frequently used 30 hashtags.[1] The colours are based on a deductive content analysis of individual hashtags based on the 5D Model. We found that the top 20 hashtags were all under three categories: culture (106,970 uses, six unique hashtags in blue), normative (109,898 uses, seven unique hashtags in orange), and functional (78,596 uses, six unique hashtags in green). The remaining hashtag, #travel, is in checkered blue as it is likely to include a combination of dimensions. These results show a more nuanced picture of Korean country image despite the conversation being hijacked by a relatively rare practice of consuming dog meat with six hashtags. K-pop bands EXO and BTS, and dog meat consumption in South Korea seem to generate considerable interest according to Twitter data. However, a simple comparison on Google Trends between these three categories from June to December 2019 reveals that BTS received the most interest, EXO about 50% of BTS's interest, and dog meat consumption a mere less than 1% of it.

In order to better explain the country image dimensions, we looked at what combinations of the top 30 hashtags were most frequently used together. Moving beyond a single hashtag frequency is illustrative as a combination of hashtags better contextualises subjects and the relationship between pairs makes it possible to observe larger topics of discussion. Our analysis revealed three main groups shown in Figure 2. The upper-right and lower-left corners
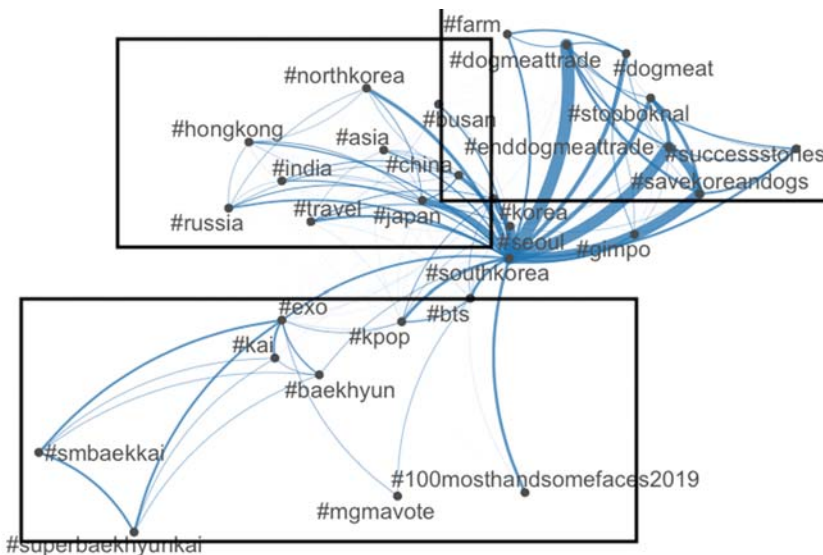

Figure 2. Hashtag Network.

Table 1. Top 10 Keywords and Dimensions.

Rank	Keyword	Frequency	Description (Dimension)
1	exo	82,888	K-Pop Boy Band (Culture)
2	seoul	82,478	Capital City (Functional)
3	spectatorindex	61,393	Think-tank, releasing data about countries (Functional)
4	weareoneexo	58,064	K-Pop Boy Band (Culture)
5	namikim_dogssk	54,598	Dog meat controversy (Normative)
6	universal	50,363	Policy, Universal Health Care (Functional)
7	health	49,728	
8	care	49,574	
9	exo_schedules	43,663	K-Pop Boy Band (Culture)
10	adopt	43,397	Dog meat controversy (Normative)

of the network respectively correspond to the dog meat controversy and K-pop. The location names in the middle are a combination of functional dimensions as Korea's achievements in global indices were compared with other countries and countries that were mentioned in K-pop bands concert tours. These three different groups overlap in three hashtags: #korea, #southkorea, #seoul.

Next, we looked at the entire text of tweets, using R's text mining package called *tm* (Feinerer, Hornik, & Meyer 2008). We created a list of all the keywords that were used more than 10,000 times throughout the dataset. We further manually cleaned the data to remove the country's names (e.g., S Korea, Korea, South Korea) and other words that did not generate meaning outside their context (e.g., new, always, unless, and today). Table 1 shows the top 10 words used with their frequencies and descriptions. In line with the hashtag analysis, the keywords also reflect the prominence of K-pop and the dominance of the dog meat controversy in the online narrative. Two specific items, namely the Spectator Index and universal health care, tell us more about what the country's functional image includes. The Spectator Index, for instance, published a tweet showing the GDP to national debt ratio of G-20 countries which showed that Korea outperformed 14 countries. Korea's provision of universal health care to all its citizens came up during the Democratic Party presidential debates and subsequently gained popularity on Twitter. Our Twitter analysis revealed the popularity of global indices which compare countries, including South Korea.

In order to contextualise the keywords, we further looked at word pairs. We focused on the pairs that were used more than 100,000 times, which gave us 106 pairs, all of which were country pairs. Japan, Germany, France, Canada, and the UK had the highest frequencies. These co-occurrences were traced back to three distinct instances. During our data gathering period, both EXO and BTS were on world tours, bringing country pairs together. Second, we were able to identify multiple think-tanks sharing data on various functions of countries, ranging from financial performance to political stance. Such think-tank tweets were widely shared by users. Last, we have observed numerous tweets using popular hashtags to market products. We then removed all country names

from the dataset and carried out a second pairing analysis. We identified the top 100 pairs, which referred to solely two topics: EXO's tour schedule and universal health care. The former has dominated Twittersphere. The latter was, as mentioned above, observed because of the Democratic Party presidential debates.

As our last observation shows one of the advantages of digital data over survey data is its temporary, ephemeral quality, while the latter requires individuals to recall their experiences and views, social media platforms enable them to instantly share their views (Schober et al. 2016, 15). We looked at the number of tweets sent every day and observed a relatively stable volume except for a few spikes. We used Google Trends to see whether the changes could be explained. We normalised the values for Google Trends scores and Twitter frequency, and mapped the changes from June 1, 2019 to December 31, 2019 in Figure 3. We did not observe a statistically significant correlation in terms of changes in volume across time, which was not necessarily unexpected given the differences in sampling, regions, languages, and weighting in between the two resources. Despite that, there have been overlaps. On October 14th, Sulli – a K-pop star and actor – was found dead. Vincent Lee (@rover829), a breaking news editor with Reuters, tweeted the news. His tweet was retweeted over 1,200 times in one day. Google Trends showed a similar increase. When EXO announced new tour dates on November 21st, both tweet volumes and search volume also increased. In August, on the other hand, we see discrepancies. While Google Trends show higher volumes, tweets are relatively low. All the top search terms related to South Korea in August were in Japanese, as the dispute between Japan and South Korea over trade flared up during that time. Our Twitter search strings were in English, which probably explains why we did not observe the same change in tweets.

Across the months, we have seen minor changes in dimensions discussed on Twitter. While some of these hashtags – such as #demdebate – completely disappeared from our dataset as the events promoted by the hashtag were over,
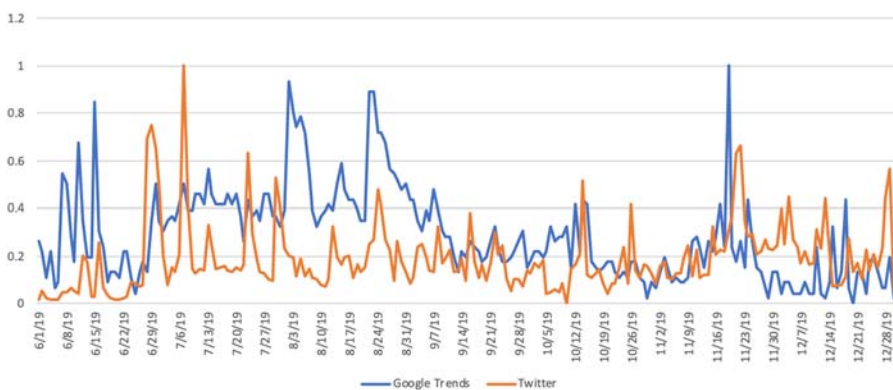

Figure 3. Google Trend Scores and Tweet Volumes.

others were used less frequently or morphed into new ones. #mgmavote, which belongs to a K-pop radio show, stayed in the top 100 over seven months but was only able to make it to the top 10 once, during the announcement of the results of its voting for various titles in K-pop. #baekhyun was created when a member of EXO, Byun Baek-hyun, announced his decision to start a solo career. It changed into #smbaekkai and #superbaekhyunkai following the news that Baek-hyun was going to join another band called SuperM.

Co-creation process

Digital data enables researchers to follow not only the content of the messages but also their dissemination on networks. In our dataset, we identified all the tweets (634,090) that had another user mentioned. To focus on more influential accounts and their relations, we calculated the average number of tweets sent by users (72,05) and further cleaned the dataset by including only the users with above average counts (45,472). The remaining tweets included 1,881 unique accounts and 3,406 unique instances of interaction.

We initially looked at descriptive statistics to see who sends the highest number of tweets. In line with the content results, we have seen accounts dedicated to the historical animosity between Japan and Korea, the dog meat controversy, and K-pop. Yet, tweet volume relies solely on individual discretion as users are allowed to send as many tweets as they want. Therefore, these statistics do not necessarily show us the audience reaction. As a second step, we looked at which usernames were included most frequently in tweets. These inclusions mean retweets or mentions, and in both cases point to an interaction. Summarised in Table 2, highest mention count users are a combination of think-tanks, K-pop accounts, accounts dedicated to the dog meat controversy, and news resources.

Four observations require further elaboration. Two prominent K-pop bands, BTS and EXO, have not sent any tweets using our English-language search query terms yet were included by others in their tweets. Justine LT Chua (@justineltchua), founder of a blog on interning and job hunting, shared her

Table 2. Most Frequently Mentioned Actors.

Users	Mention Count	Tweet Count
@spectatorindex	61387	98
@weareoneexo	57851	0
@namikim_dogssk	54569	1246
@exo_schedules	43712	32
@public_citizen	38416	21
@reuters	17694	622
@theworldindex	17553	46
@mrmarkmillar	14549	1
@bts_twt	13536	0
@justineltchua	12009	2

appreciation of Korean dramas in a humorous manner, getting retweeted by over 12,000 users. Third, Mark Millar, one of the creators of the Kingsman franchise, has only one tweet in our dataset where he tweeted a short video of BTS in a Kingsman themed stage. The tweet got over 14,000 retweets within our study period. Last, our list includes two think-tanks (@spectatorindex and @theworldindex) and a news organisation (@reuters). Information about South Korea coming from these accounts were widely retweeted.

As users post content on these platforms and engage with each other, we can also map their interactions and use these network maps to show which institutions, organisations, and individuals help disseminate messages about Korea to different parts of the network. Figure 4 shows the network map.[2] Each circle denotes a Twitter user. The size of the circle is based on degree centrality, a measure that calculates the sum of all the interactions an actor has with other users (Wasserman & Faust 1998). Colour is based on modularity class measures, meaning that actors with the same colour have more frequent interactions with each other compared to the rest of the network (Wasserman and Faust 1998).

In terms of the co-creation process, the network map shows three important results. First, influential actors have their own modularity groups. There is no
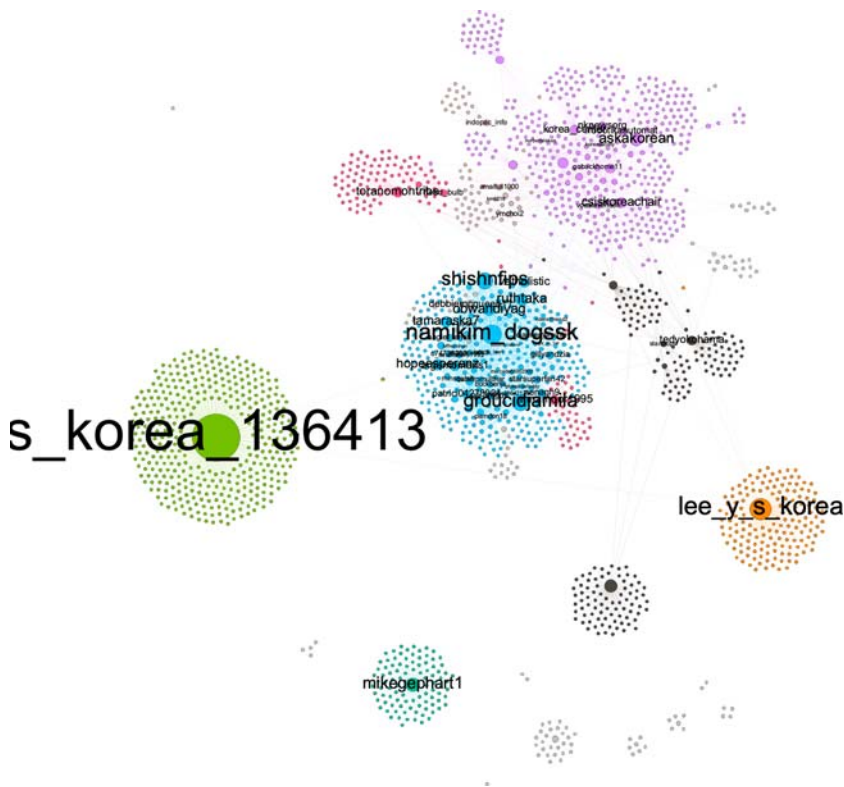

Figure 4. Network Map of User Interactions.

single actor that has the potential to control the entire co-creation process. Rather, users with different interests around South Korea communicate with each other. Second, we can see how messages might travel between modularity groups as they vary in terms of their connection with other groups. The teal group around @mikegephart1 mainly discusses American politics and is interested in Korea only within this particular context. The group is not connected at all with the rest of the network. The green group surrounding the user @S_Korea_136413 are BTS fans, or the BTS Army, as they are known. Their connection with the rest of the discussion is solely through SBS Now, a Korean broadcaster. The purple group on the upper right corner includes news agencies, formal and informal outreach groups from South Korea, and academic institutions which are well connected with other political and cultural groups. The red and orange groups, both interested in Japan-Korea relations, are connected with each other, but solely through intermediary groups. Despite their interest in the same topic, both seem to take strong stances, the red group aligning with the Japanese narrative and the orange group with the Korean one. Third, we calculated closeness centrality scores to see which actors can more easily communicate with any given actor in the network (Wasserman & Faust 1998). We were able to identify a think-tank (@csiskoreachair), an outlet on North Korean news (@nknewsorg), and a journalist covering Asia (@VOAStevenson) as possible connector points among different modularity groups.[3]

While there are advantages to using digital data in assessing a country image, such an attempt by itself is prone to manipulation as sampling is based on self-selection. As was the case with the dog meat controversy in our study, determined and committed users were able to completely change the conversation. Yet, survey results point to the topic as a fringe issue with only four respondents. In the next section, we therefore introduce survey data as a way to complement and interpret the findings of digital data as well as to show how different dimensions work together.

Surveys

Surveys enable us to dive deeper into how respondents see South Korea. 3,244 out of our 4,006 respondents (81%) have never been to South Korea. Unsurprisingly, we have observed longer answers in open-ended questions from those

Table 3. Average Scores in Five Dimensions.

	Nature	Culture	Functional	Normative	Emotional
France	3.57	3.63	3.87	3.31	3.39
Indonesia	5.53	5.47	5.26	5.18	5.34
Japan	2.87	3.29	2.47	2.24	2.37
USA	3.67	3.89	3.61	3.41	3.57

who have visited the country. In all four countries, respondents who have been to the country multiple times have marked shopping as an important strength of the country. Also, especially in the US, functional aspects like South Korea's strong economy, nuclear and military power, strong leadership, and educational and trade system, as well as products like cars and electronics were mentioned as strengths. Cultural country image dimensions like arts and culture, food, the export of music (K-pop) and the Winter Olympic games were mentioned. A bit less often were normative aspects mentioned, like open-minded, resilient people, respect towards elderly people, anti-communism, democracy and freedom for their people. The tensions between Japan and South Korea impacted the responses as comments ridiculing the Korean military, accusations of copying Japanese products, and inviting historical discussions were observed in Japanese respondents' open-ended answers, even among those that have visited the country multiple times. Other answers with regard to the weaknesses of South Korea were mainly related to functional aspects, e.g., their proximity to North Korea and dictator Kim Jong-un, as well as their weakness regarding military and nuclear power compared to their northern neighbour. Normative aspects like air pollution and congestions, money laundering, corruption, vast divide in classes, and not gay-friendly nor very accessible for disabled visitors, dogmeat scandals were also mentioned. Being asked about what news people remember about South Korea, we typically find news related to the respondents' home country, e.g., Trump's visit to South Korea. In terms of the cultural country image dimension, it was often recognised that South Korea hosted the Winter Olympics in 2018, with the Olympic teams paired up from North and South Korea, and also K-pop was mentioned.

The Likert-scale questions in our survey included 10 items in the functional dimension, eight in the normative dimension, six in the cultural dimension, four in the nature dimension, and four in the emotional dimension (see Ingenhoff and Chariatte 2020 for the complete list of items and the methodological instrument used). Table 3 shows the averages based on a seven-point scale.

We analysed which country image dimensions were key drivers in each of the countries. To do so, we applied variance-based structural equation modelling techniques (VB-SEM), using the software SmartPLS. Before we analysed the results, we needed to check the quality of our outer and inner measurement models. First, we needed to check the quality of the outer measurement model. The quality criteria, i.e. Cronbach's α, the composite reliability and the average variance extracted, showed satisfying results, so that the reflective outer model could be accepted (Ringle and Sarstedt 2016) for all four countries[4]. Second, the inner measurement model was examined to explain the relationship between the cognitive dimensions and the emotional dimension of country images. Nearly all path coefficients in all four countries were significant and

positive (except nature on the emotional dimension in Japan and functional on emotional in Indonesia). The cultural dimension had a very strong effect on the emotional dimension in the United States (0.367) and France (0.381). Here, the item measuring charismatic people in arts and sports seemed to be an important value driver. This result could be linked to the open question results on K-pop and the Olympics, as well as the digital data. The normative dimension had also a strong effect on the emotional country image dimension, especially in Japan (0.322) and Indonesia (0.299). Here, the attitude towards foreigners seemed to be a value driver, as well as showing solidarity. This result could also be connected to the open questions' results which among others refer to the North-South conflict. Interestingly, the nature dimension had the lowest effect. All in all, we concluded that all four cognitive country image dimensions contributed significantly to explain the affective, emotional country image dimension.

Finally, we calculated the SEM-models' accuracy in predicting an outcome through the R^2 value which showed how much of the models' cognitive constructs explained the variance of the affective construct (Ringle & Sarstedt 2016). American respondents had the highest R^2 with 0.70, meaning that 70% of the variance of the emotional dimension was explained by the other dimensions. Indonesia, Japan, and France respectively had values of 0.68, 0.66, and 0.65. A last step evaluates the model fit in PLS-SEM with the standardised root mean square residuals (SRMR). A value of 0.08 or lower showed that the model has a good fit (Hu & Bentler 1999). Thus, with a value of 0.04 for France, 0.035 for the United States, 0.037 for Indonesia, and 0.041 for Japan the SRMR confirmed a very good model fit.

Conclusions

Throughout this article, we made the case for augmenting survey data with digital data in country image studies. We started our arguments by highlighting three challenges faced by scholars and practitioners in the operationalisation and measurement of country images. First, as a relatively young concept with no set boundaries, analysing country images requires rich textual data. Even though standardised, representative survey studies offer data that can be analysed using structural equation models (PLS-SEM), and by this disclosing the key latent components that lay behind our conscious minds, it is necessary to complement analysis of country images with data from open survey questions, as well as with digital data.

Second, we positioned digital data as complementary sources for county image studies. This digital move made sense not only because of digital data's quality of being more accessible, easier, or cheaper sources. We need these digital platforms as they are vital parts of public opinion formation, especially in the younger generation. If more and more individuals turn to

social media to get their news and information, researchers need to look at the same platforms for data. As country-images are co-created, it is important to identify certain concepts, such as influencers and connectors.

Third, we discussed that measurement practices in country images have experimented with a variety of sources, with each source having certain advantages and disadvantages. Integrating digital data sources into an already crowded field requires prioritisation. We used three different resources – Twitter, Google Trends, and survey data – to study the Korean country image and found out that descriptive, exploratory, and structured results from each source tell an important story about country image. Twitter data, for instance, gave us unprompted textual data that could be continuously monitored and the ability to look at the interactions among users. Users were able to paint a more extensive picture of South Korea, ranging from the dog meat controversy to K-pop and Korean foreign policy. Temporary rise in interest showed us the importance of a country's performance in global indices. We were able to see that not only country image messages but also the actual policies in social, political, and economic areas were appreciated by audiences. We also observed that official Korean resources were not necessarily involved in the image co-creation processes but rather these were led by influential actors in small subnetworks. Digital data, on the other hand, was not a solution by itself as self-motivated individual users were able to hijack the chatter around the country. External events with limited relevance, such as the Democratic presidential debates, brought in an avalanche of tweets, manipulating quantified measures. Representative survey studies offer data that can be analysed with structural equation models (PLS-SEM), outlining key value drivers for country images. As each dimension's relative influence is calculated separately, this particular information enables researchers to provide pracitioners with specific policy recommendations.

In addition to its sampling and weighting biases, interpreting these large datasets required contextual and theoretical information. In one such instance, for example, we observed Gimpo as a frequently used keyword. Gimpo, a town in South Korea, hosts the second largest airport in the country and is also believed to operate multiple dog farms. Similarly, we had to account for various events relevant to South Korea, ranging from K-pop bands' tour schedules to high-level intergovernmental meetings, to interpret even the most basic descriptive statistics. Furthermore, categorising this large volume of text was solely possible through a theoretical framework (5D Model) as inductive analyses did not yield meaningful results. This particular argument does not fall far from computational approaches in social sciences in general and computational international relations practice in particular (Unver 2019). We promote the use of large-scale found data in public opinion, yet such analyses need to be preceded by a framework grounded in 'culturally-sensitive social science research' (Unver 2019, 177).

This research is not without its limitations. First, our data resources employed different sampling strategies. While our survey was based on a robust case selection process, our Twitter data collection was based on a global level, limited solely by language due to our search keyword solutions. We carried out ad-hoc Google Trends analyses and did not monitor search results continuously. Consequently, a comparison across datasets was not possible. Second, lack of Twitter penetration in Korea was a challenge. While country image primarily deals with the perception of foreign audiences and disregards domestic views, it is possible that Korean organisations that need to engage with both domestic and foreign audiences had low levels of activity on Twitter. Third, throughout the paper, we used our empirical findings solely to support our methodological arguments. We did not share a complete picture of Korean country image or the formation process of public opinion as we believed such an attempt requires a stand-alone study.

Summing up, country image studies should not solely rely on public opinion surveys as they present partial explanations of country images and may lead to missing important data. Digital found data should also be seen as windows onto public opinion as they contain unprompted and open-ended textual data. Moreover, as they also portray social relations among users, they make it possible to identify co-creation processes and influential actors. However, analysis of such data should be theoretically and culturally grounded and be used to augment the findings from other resources. Digital found data has the potential to complement designed data, which, in turn, can pave the way for more informed policymaking.

Notes

1. We have removed variations of the country's name in this list since they contain the search key strings.
2. All network calculations and visualisations were done using *Gephi* (Bastian, Heymann, & Jacomy 2009).
3. This explanation includes accounts that were not part of the dog meat controversy modularity group since we consider that particular group to be a fringe element in co-creation processes.
4. Cronbach's α (United States = 0.88; France = 0.9; Japan = 0.93; Indonesia = 0.9), the Composite Reliability (United States = 0.92; France = 0.93; Japan = 0.95; Indonesia = 0.93) and the Average Variance Extracted (United States = 0.75; France = 0.77; Japan = 0.83; Indonesia = 0.76).

Disclosure statement

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