



SCHOOL OF
ECONOMICS AND
MANAGEMENT

Does Bad News Affect Trade?

A study on the effects of Negative Shock on the Perceptions of Production Conditions;
contemplating the 2013 Rana Plaza Industrial Accident in Bangladesh

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Abstract

The research paper analyses the impact of negative news, in terms of shock, on the binary trading relationship of Bangladesh with the rest of the world using the readymade garment industrial catastrophe of Rana Plaza collapse of 2013. To assess the geographical distribution of negative news, the per capita volume of search index from Google Trends is treated as the key variable. The paper applies Gravity Model to evaluate the shock on the import volume of all countries from Bangladesh. The analysis presents a negative correlation, supporting the hypothesis that adverse impact of breaking information prevails on trade. However, the obtained coefficient values are too small to influence import and leads to the inference that digital mean of boycott is not likely to have a major impact on trade.

Keywords: consumer boycott, Rana Plaza, Google trends, Gravity model.

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List of Acronyms

ABWSAlliance for Bangladesh Worker Safety
AFBSBAccord on Fire and Building Safety in Bangladesh
BGMEA	.....Bangladesh Garment Manufacturers and Exporters Association
CSR	.....Corporate Social Responsibility
EU	.....European Union
FE	.....Fixed Effect
FTA	.....Free Trade Agreements
GSP	.....Generalized System of Preference
GDP	.....Gross Domestic Product
ILO	.....International Labour Organization
ITC	.....International Trade Centre
KM	.....Kilo meters
KSA	.....Kingdom of Saudi Arabia
LSDV	.....Least Squared Dummy Variable
PM	.....Prime Minister
PFA	.....Preferential Tariff Arrangement
RMG	.....Ready-Made Garments
RMGP	.....Ready-Made Garments Sector - Program
UAE	.....United Arab Emirates
UK	.....United Kingdom
US	.....United States
USD	.....United States Dollars
WTO	.....World Trade Organization

1. Introduction

As old as the human history can be uncoiled, trade has been an integral part of economic development. Starting from basic exchange of goods and services from one party to another in a close encompassing region, trade has now been internationalized across national borders. Traditionally trade had been commenced based only on the feasible availability of quality goods and services, without shedding any light on the process and mechanism behind the production. But now, due to the evolving concerns regarding issues like the environment, child labour, producer's well-being etc., consumers show similar concern under which circumstances the goods and services are produced. With advancing technology and communication, consumers have the capacity to know about the production condition of goods and services they are consuming and parallelly give themselves the authority to replace any good that involves unethical, inhumane or environment damaging means of production or usage with a better substitute. This brings to our objective to perceive the answer to the question "What happens if there is a negative shock in people's perception about the production conditions?" In other words, now that consumers are well aware of the consequences of pollution of environment, violation of worker's rights and animal wellbeing etc., if they find out a widely used product to be any less eco-friendly or not aligned with humane rights of a particular standard, do they substitute away from importing goods from that country? What happens to the overall export scenario of that country if their exported goods are rejected by the global consumers for not following the basic regulations?

To elucidate this idea, we will shed light on an example of the 2013 readymade garments factory accident in Bangladesh which caused the death of more than 1,100 people in a noticeably short span of time. This horrific accident took place when a multi-storeyed commercial building collapsed to ground with thousands of RMG workers working inside, ignoring all the signs of the building being unsafe for such heavy industrial usage. These discrepancies often occur due to the massive pressure from the ordering companies to ensure deadlines which results into the management to compromise their workers' health and safety. It is to be noted that Bangladesh is one of the world's top 3 apparel exporters of western fast fashion brands, of which 60% is exported to European retailers, 30% to American buyers and 10% to other parts of the world (Paul and Quadir, 2013), making the tag of "Made in Bangladesh" a familiar label in any western household. This deadly incident reached out the global market within minutes and people relied on the internet to get instant information about

the accident. Therefore, using data on Google searches around the time of the accident as an innovative way of capturing the negative shock in people's perception of Bangladeshi working conditions, we will analyse whether there is a correlation between distribution of negative news about the accident and overall import of the world from Bangladesh.

From a general perspective, any country with vulnerability in terms of trading relationship with the rest of the world, is subjected to be adversely affected by a widespread negative report. The research, thus, considers Google Trends as a web-based tool to evaluate the magnitude of shock received by consumers and describes the use of Internet search information on Google. The rest of the paper will elaborate the catastrophe of Rana Plaza collapse, reaction of global consumers to the accident, impact of the shock on the import of RMG with a brief sketch of the measures that were taken by the country to avail the effects of the negative shock and finally whether the news has an actual impact on the import volume, or not.

2. Empirical Background: Industrial Accidents of Bangladesh

The readymade garments industry is one of the major labour-intensive sectors of Bangladesh. According to the Membership and Employment Directory of Bangladesh Garment Manufacturers and Exporters Association (BGMEA), almost 5,000 garment factories are responsible for the employment of more than 4 million workers out of the total population of over 166 million (Paul and Quadir, 2013). With the rapid exposition and expansion of the industry to the world market, not only it has been generating a huge field of employment, but the stress has also affected the RMG industry to encounter numerous tragedies, claiming lives of people serving the industry. From 2005-2010, within just 5 years, 8 major industrial building collapses and fire hazards have occurred in only Dhaka and Chittagong, the capital and industrial capital of Bangladesh, causing officially 219 deaths and 324 fatal injuries on paper. These accidents occurred are mostly manmade, out of authority's negligence and thrive towards cheaper production (Al Jazeera, 2019).

But the most devastating garment-factory disaster of Bangladesh is the Rana Plaza collapse, which is commonly known as the "2013 Savar building collapse". This deadliest structural failure in the modern human history occurred on April 24, 2013 when an eight-storey commercial building collapsed to the ground. The collapse took around 90 seconds to take place, resulting to the death of 1,134 workers and the life-threatening injuries of 2,515 workers working inside the building (Hopkins, 2015). This complex consisted of one bank, few

residential apartments, several shops and five garment factories naming New Wave Style, New Wave Bottom, Phantom Apparels, Phantom Tac. and Ether Tex., supplying manufactured apparel for brands like Adler Modemärkte, Ascena Retail, Auchan, Bon Marché, C&A, Benetton, Camaieu, Carrefour, Cato Fashions, El Corte Inglés, Grabalok, Gucci, Gueldenpfenning, Inditex, JC Penney, Joe Fresh, Kids for Fashion, Kik, Loblaws, LPP, Mango, Manifattura Corona, Mascot, Matalan, Moncler, NKD, Prada, Premier Clothing, Primark, PWT, The Children's Place, Versace, Walmart, and YesZee originating from Belgium, Canada, Denmark, France, Germany, Ireland, Italy, Poland, Spain, UK, and USA (Nelson and Bergman, 2013). An investigating committee by the Government of Bangladesh figured out the reasons behind the collapse are the use of extremely poor-quality construction materials on a swampy ground and extension of the upper four storeys without any legal permit from the concerning authority. The report further mentioned that the building was not designed for industrial use; thus, the weight of thousands of people working in a very concentrated area, heavy industrial machines and their vibrations kicked into the collapse of the building.

The accident and the investigation caused severe sensitivity worldwide and brought the poor condition of such globally spread industry of Bangladesh in front of the world. Global consumers relied on social networks to vent their frustration out after hundreds of workers' corpses were found within a day of under the garment factory building collapse. A local consumer was found to charge famous Canadian brand Joe Fresh on their social media platform as "Do the people running this company sleep at night knowing that they are partly responsible for the deaths of so many people?" Consumers also unleashed their disappointment at retailers who did not have direct affiliation to that specific building but are known to source from factories that are located in the same region, for example H&M, one of the most popular Swedish multinational clothing-retail, when one consumer claimed that he would start shopping again there only if the retailer stops using slave labour in its clothing production (Fox, 2013). Two months after the collapse, the then President of the U.S. Barack Obama declared the suspension of Generalized System of Preferences (GSP), the preferential tariff system of the U.S. for Bangladesh, resulting into a reputational cost to the RMG industry of Bangladesh in the world market and deterring American companies from investing in the country unless amendment in labour law and enhancement of worker's rights and safety were implemented in accordance to the international standards (Pennington, 2013).

3. Theoretical considerations: How do bad news reports affect trade?

We, therefore, consider the hypothesis that when there is a negative shock to the perceptions about production conditions, it has a negative effect on exports of that country. As per the basic concepts of the demand theory of modern economics, the three characteristics to define an effective demand are a consumer's desire, willingness, and ability to pay for a product. When a large-scale industrial accident occurs, whose consumers are spread all over the world, one of the immediate aftermaths to apprehend is the consumers' outburst to the accident. Consumers, thousands of miles away from the accident spot, can refrain themselves from buying any products that were made under unhealthy and inhumane circumstances. In our case, as the reasons behind the accident keeps getting unfolded, people's perception regarding the working condition in Bangladeshi RMG industry grow adverse simultaneously. The ignition transforms into fumes when consumers figured out that companies often are not transparent about how they monitor productions overseas and do not make the producers meet the health and safety standards. This is where the 2nd characteristics of demand shows its mechanism.

Despite of having the desire and ability of buying readymade garments, consumer's anti-willingness to pay for garments coming from such precarious working environment shakes the retailers. The retailers have been importing from Bangladesh for decades due to their relatively cheaper prices in the global market. But due to the outburst of consumers, retailers will no longer be interested in conducting trade with Bangladesh. To meet up the global demand of RMG the retailers switch to engage more in trade with other trading partners like China, Hong Kong, Turkey, and India, who produce similar goods in a competitive price.

If the retailers manage to fulfil the global demand of RMG from its close substitutes, the demand of Bangladeshi garment would shrink drastically. In the modern day of information accessibility, no matter how much the prices of Bangladeshi garment are reduced, the retailers would not import from Bangladesh if the consumers do not want to buy Bangladeshi garments.

This will not only effect the RMG industry but consumer's negative perception about the overall working condition in Bangladesh will lead to drastic fall on other exporting goods of the country as well. As an export-based country, the repetitive disasters and the lashing out of global consumers certainly have an impact to the overall image of Bangladesh in the world market. Bangladesh could be removed from the global supply chain and it would take decades to rebuild the stance where Bangladesh was standing on during the time of the accident.

4. Literature Review

In this chapter, few studies conducted on controversies across the globe that lead up to the consumers shunning and their consequences are discussed:

Fattah (2006) sheds light upon the controversial publication of a newspaper in 2005 that turned the Muslim consumers all over the world against Denmark. According to the report, a Danish newspaper Jyllands-Posten published a caricature of the Muhammad, Holy Prophet of Islam, that triggered a varied group of Muslim activists to boycott Danish packaged foods. The boycott was mainly concentrated in KSA, Libya, Kuwait, UAE, and other Persian Gulf countries like Bahrain, Iraq, Oman, Qatar etc. This resulted into the drastic fall of the sale of Arla (Europe's second-largest dairy company from Denmark) in these regions, followed by 2 employees of the same company getting beaten up by customers in Saudi Arabia; while in Gaza, there were open fire in the air in front of the EU office. Initially refusing to take any measures addressing the boycott, the newspaper authority finally gave up after months and apologized for insulting Muslim sentiments, even though their action was not against the Danish law.

Chavis and Leslie (2009) analysed the boycott of French wine in the US in early 2003 during the US-led war in Iraq. France and Germany, as members of the United Nations Security Council, strongly opposed the invasion of the US in Iraq, while France was more outspoken against it. This led to the consumer boycott of French wine in the US, even though the French wine industry had no part in the opposition made by the French Government against the war. Evidently, 2.7% of the total volume of the US wine market was dominated by the French industry and the boycott by the US consumers cost approximately \$112 million of revenue to the French wine importers. Author concludes by stating that the boycott has been economically significant even though the accurate magnitude is not apparent.

Koku (2012) assesses the effectiveness of consumer boycotts that target firms and injure economies by means of the internet as a mean of market response. Based on market returns analysis of 63 events of consumer boycotts from 2004 to 2008, the author came to realize that the internet might not be as effective as other platforms of boycott by the consumers, however, they are to be taken seriously because negative news or comment on the internet does potential damage to the image of the targeted party. Author further continues while concluding that no matter how ineffective tool internet appears to be regarding consumer boycott, the management

cannot ignore and remain unconcerned of the potentiality of internet to make their goods and services undesirable to the consumers.

Heilmann (2014) estimates the impact of international political conflict on bilateral trade, based on several incidents that rose from nothing related to trade at all. Boycott of French goods by the US over the Iraq War, Danish goods by Islamic Countries due to religious controversies, Japanese goods by China over territory conflict, and Israeli goods by Turkey over the Gaza conflict were few of the many international controversies that created sensations all around the globe. The author ran over a Synthetic Control Method and the analysis shows that there is a strong negative effect on the bilateral trade in both goods and services due to these boycotts. The boycotts effect mostly the consumer goods of all the above countries and except for Denmark, where the disruption took place for almost a year, whereas rest of the impacts were for quite short term. Author also identified a reciprocal negative effect on the trade by the boycotted party to the boycotter in case of Iraq and Gaza, however it is all for a short term.

Halimi (2017) intends to analyse the variation in willingness to pay of the Arab based Muslim consumers for Israeli product due to animosity between the producer and consumer states, despite of having common religious belief and nationality. Author adapts a grounded theory approach and interviews about 30 Arab-Muslims on their willingness to buy products that has no defect other than the fact that they are produced in Israel and the result shows there lies a correlation between these two variables. Consumers are deeply infected by the intensity of animosity between the two nations which causes significant fall of the demand of Israeli products in KSA. This led Israeli companies to strengthen their marketing plan to engage to customers and distance themselves from the core of the conflict as much as it is possible.

As this chapter follows, we talk about two studies that were executed especially on the case study we have i.e. Rana Plaza accident, how consumers and shareholders reacted to it and its aftermath in brief:

Aizawa and Tripathi (2016) conducted their research on the aftermath of the tragic Rana Plaza collapse, mentioning the RMG industry of Bangladesh as accident-prone with poor safety measures. The study focuses on the prompt international response towards the crash and how the European and American companies have relied on third-party factory auditing and monitoring to ensure the international standard of working environment. Authors shed light on how consumer backlash and criticism have sensitized companies and factories to pay greater

attention on the operation of the suppliers. The study further discusses the steps taken by the international companies as a response to the crisis.

Jacobs and Singhal (2017) conducted their research on the effect of the tragedy of Rana plaza on the shareholder wealth of retailers and the implications for sourcing strategies. According to the authors risks, in terms of supply chain and reputation of an industry, often motivate firms to source production more in high cost developed country than the low-cost developing country. Based on the sample of 39 publicly traded global apparel retailers, the stock market reaction to the Rana Plaza disaster was analysed and no significant reaction of stock market during the 11 days after the accident was observed; even after the execution of the AFBSB and ABWS. This insignificant negative economic impact from the Rana Plaza collapse was interpreted by the authors as such that retailers have little economic incentive to move sourcing out of Bangladesh to reduce the risk of being involved in such incidents.

Studying all these related literatures, we can draw an assumption that for countries with diversified range of exporting goods and destinations, consumers boycott does not have as major impact on trade as the intention behind originally was. Bangladesh is diverse in export with main export items being RMG, shrimps, jute, leather goods and tea in large volume (ITC by country-Bangladesh, 2014). But, economically speaking, Bangladesh is much smaller in comparison to economies like Denmark, France, China etc. as discussed above, so the impact of spread-out of such bad news could be potentially more harmful to their exports. The last two studies shed light on the fact that even though there were consumer backlashes, stock market remained less volatile for Bangladesh being a low-cost country. Our objective is to assess the impact of the negative shock of the accident empirically and add a varied research outcome to the existing set of papers.

5. Data Collection and Evaluation

For our study, the core independent variable is the number of times netizens¹ searched for and about the Rana Plaza accident of Bangladesh over the internet. This brought us to sum up all the Google searches² people all over the world made regarding the accident during a certain

¹ Netizens are "net citizen" i.e. portmanteau of Internet and citizen.

² Google search data has vastly been used in several studies (i) to forecast the private consumption of the US citizens (Vosen and Schmidt, 2011), (ii) to quantify the trading behaviour in financial market (Preis, Moat and (...) Stanley, 2013), (iii) to forecast car sales in Netherlands (Kuk, 2018), (iv) to nowcast real-time surveillance of disease outbreaks (Carneiro and Mylonakis, 2009) etc.

period after the accident. Out of more than 140 search engines in the world, local and global, we undertake the searches on google.com only because 75% of the search market share are owned by Google, making it world's the most widely used search engine. In trends.google.com the following terms are combed:

- i. Bangladesh-south Asian country,
- ii. Bangladesh-key word,
- iii. Rana Plaza, and
- iv. 2013 Dhaka Garment factory accident

For every country in the world, each of the 4 searching terms are explored³. The data hunting has been done for 1 month (April 24, 2013 - May 24, 2013) and 6 months (April 24, 2013 - October 24, 2013) from the accident. The two kinds of timelines are considered to evaluate the immediate shock and a slightly prolonged shock the Rana Plaza accident had on the consumers. Where there are few countries that did not make any searches online regarding the accident, almost every other countries of the world hit the internet to know about its details after days and months have passed from the accident.

From the raw data we see that with 6383 searches in 30 days, the United Kingdom stands at the topmost in the search list, with Australia, Germany, India, Italy, Singapore, United Arab Emirates and United States of America making more than 5,000 searches each. Reportedly the apparel brands whos' industries were established in the Rana Plaza building are mostly from these countries. So, we get that consumers from these countries would react most instantly after the accident. Furthermore, it is observed that in 6 months more than 15,000 searches were done by those countries who were previously on the top tier by making more than 5,000 searches in 1 month. The raw data depicts that the United Kingdom and India are the top 2 searchers where one is one of the most important importers of Bangladesh and later is one of the most significant competitors in the RMG global market. According to the database in Bangladesh High Commission in London, 80% of the import of UK from Bangladesh is knitwear and woven garments and the export of Bangladesh to UK dropped from 10.23% to 9.66% of its total export from 2012-13 to 2013-14.

³ Random variations of search terms, containing related content were searched for as well, but there were not enough searches made for Google to show the data. Thus, these 4 search terms were finalized.

For the convenience of our analysis to assess the impact of the searches, the number of searches is reworked with the population to get an adjusted and equivalent distribution of Google Searches. Following table contains the number of per capita Google searches for 1 month:

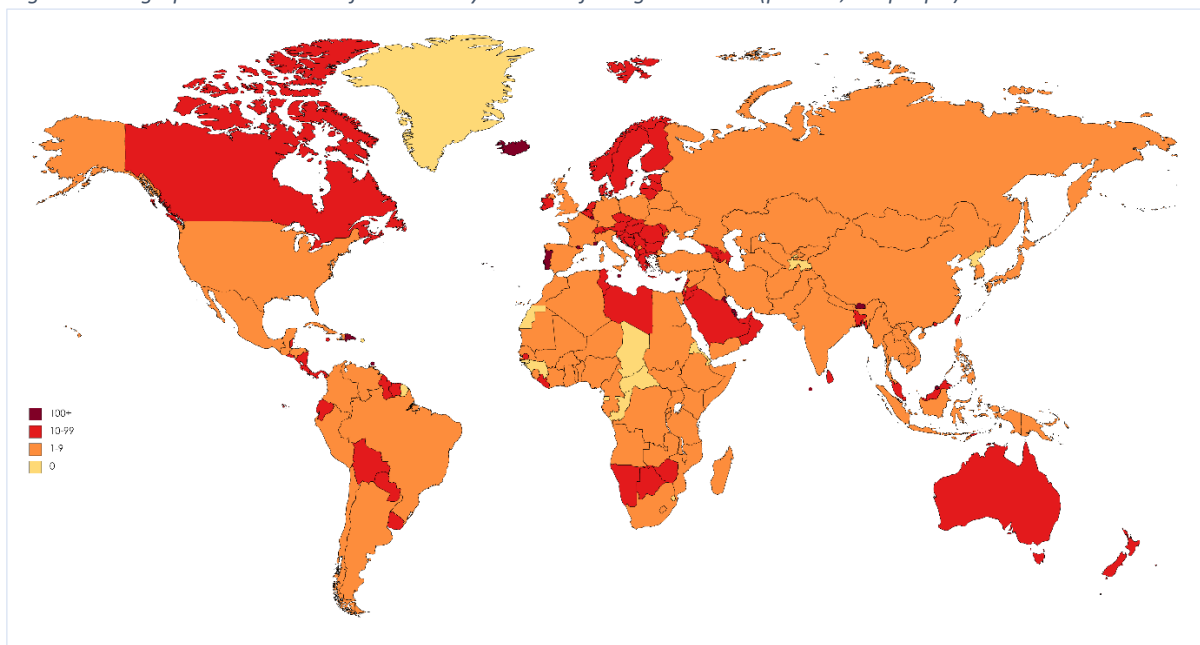
Table 1: Number of Google Searches (per 100,000 people) by all the countries in 1 month from the Rana Plaza accident

# of Searches (per capita)	Countries
100+	Andorra, Antigua and Barbuda, Bahrain, Barbados, Bhutan, Brunei, Cyprus, Dominica, Fiji, Grenada, Iceland, Kuwait, Liechtenstein, Luxembourg, Maldives, Malta, Mauritius, Monaco, Portugal, Qatar, Seychelles, St. Kitts and Nevis, St. Lucia, Trinidad and Tobago
10-99	Albania, Armenia, Australia, Austria, Azerbaijan, Bahamas, Belgium, Belize, Bolivia, Bosnia and Herzegovina, Botswana, Bulgaria, Canada, Costa Rica, Croatia, Czech Republic, Denmark, Ecuador, El Salvador, Estonia, Finland, Gambia, Georgia, Greece, Guyana, Hong Kong, Hungary, Ireland, Israel, Jamaica, Jordan, Latvia, Lebanon, Liberia, Libya, Lithuania, Malaysia, Moldova, Montenegro, Namibia, Netherlands, New Zealand, Nicaragua, North Macedonia, Norway, Oman, Panama, Paraguay, Romania, Saudi Arabia, Serbia, Singapore, Slovakia, Slovenia, Sri Lanka, Suriname, Sweden, Switzerland, Taiwan, Timor-Leste, Tunisia, United Arab Emirates, Uruguay, Zimbabwe
1-9	Afghanistan, Algeria, Angola, Argentina, Belarus, Benin, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, Chile, China, Colombia, Congo, Cote d'Ivoire, Cuba, Dominican Republic, Egypt, Ethiopia, France, Gabon, Germany, Ghana, Guatemala, Haiti, Honduras, India, Indonesia, Iran, Iraq, Italy, Japan, Kazakhstan, Kenya, Kyrgyzstan, Laos, Lesotho,

	Madagascar, Malawi, Mali, Mauritania, Mexico, Mongolia, Morocco, Mozambique, Myanmar, Nepal, Niger, Nigeria, Pakistan, Papua New Guinea, Peru, Philippines, Poland, Russia, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, South Korea, South Sudan, Spain, Sudan, Syria, Tanzania, Thailand, Togo, Turkey, Turkmenistan, Uganda, Ukraine, United Kingdom, United States of America, Uzbekistan, Venezuela, Vietnam, Yemen, Zambia
0	Cabo Verde, Central African Republic, Chad, Comoros, Congo, Djibouti, Equatorial Guinea, Eritrea, Eswatini, Greenland, Guinea, Guinea-Bissau, Kiribati, Marshall Islands, Nauru, North Korea, Palestine, Samoa, San Marino, Sao Tome and Principe, Solomon Islands, St. Vincent and the Grenadines, Tajikistan, Tonga, Tuvalu, Vanuatu, Vatican City

The geographic distribution of per capita Google Searches of 1 month is illustrated as follows:

Figure 1: Geographic Distribution of countries by number of Google Searches (per 100,000 people) in 1 month



Keeping the instantaneous reaction at one side, the study further looks onto the number of searches that were made 6 months after the accident. Now this might include searches that were done for other purposes along with the accident, but since there has not been any

occurrence of such magnitude of the Rana Plaza accident, the variation is considered negligible and the searches of the same 4 key terms are taken under consideration. The list of the countries with distribution of 6 months searches on Google adjusted to the population (per 100,000) is as follows:

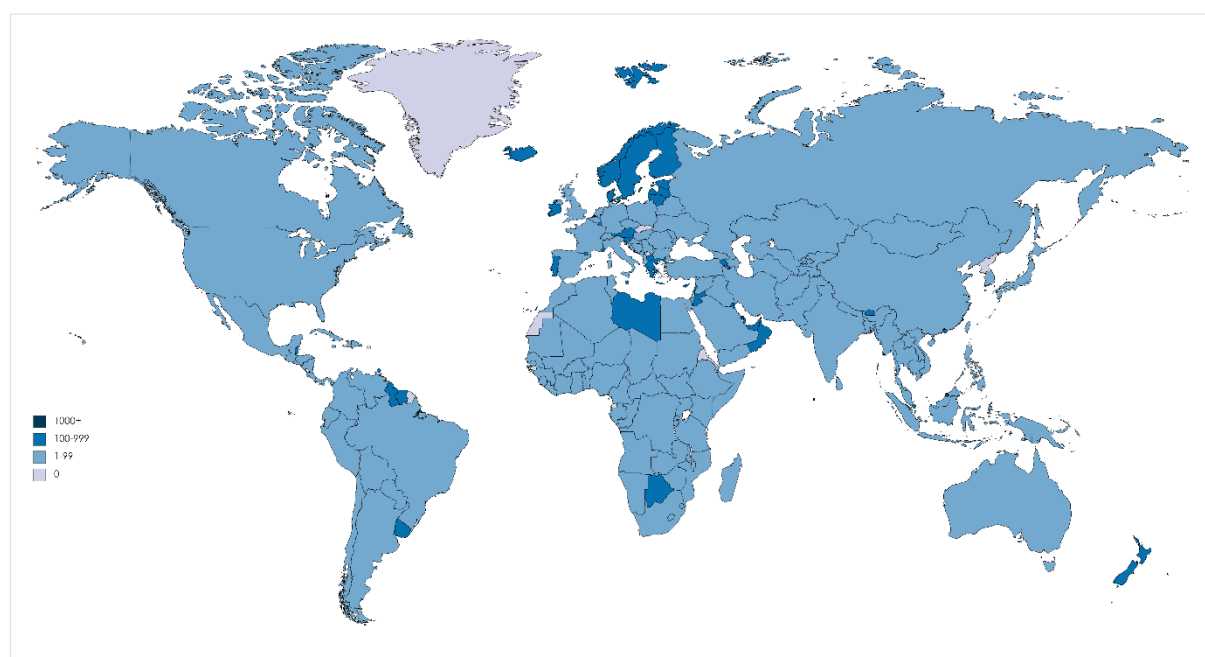
Table 2: Number of Google Searches (per 100,000 people) by all the countries in 6 months from the Rana Plaza accident

# of Searches (per capita)	Countries
1000+	Bahrain, Brunei, Maldives, Palau, Seychelles
100-999	Andorra, Antigua and Barbuda, Armenia, Austria, Bahamas, Barbados, Belize, Bhutan, Botswana, Cyprus, Denmark, Dominica, Estonia, Fiji, Finland, Greece, Grenada, Guyana, Hong Kong, Iceland, Ireland, Jordan, Kuwait, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Malta, Mauritius, Monaco, New Zealand, North Macedonia, Norway, Oman, Portugal, Qatar, Singapore, Slovenia, St. Kitts and Nevis, St. Lucia, Suriname, Sweden, Timor-Leste, Trinidad and Tobago, United Arab Emirates, Uruguay
1-99	Afghanistan, Albania, Algeria, Angola, Argentina, Australia, Azerbaijan, Bangladesh, Belarus, Belgium, Benin, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Congo, Costa Rica, Cote d'Ivoire, Croatia, Cuba, Czech Republic, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Eswatini, Ethiopia, France, Gabon, Gambia, Georgia, Germany, Ghana, Guatemala, Guinea, Haiti, Honduras, Hungary, India, Indonesia, Iran, Iraq, Israel, Italy, Jamaica, Japan, Kazakhstan, Kenya, Kyrgyzstan, Laos,

	Lesotho, Liberia, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mexico, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, Nicaragua, Niger, Nigeria, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Romania, Russia, Rwanda, Saudi Arabia, Senegal, Serbia, Sierra Leone, Somalia, South Africa, South Korea, South Sudan, Spain, Sri Lanka, St. Vincent and the Grenadines, Sudan, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, United Kingdom, United States, Uzbekistan, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe
0	Comoros, Equatorial Guinea, Eritrea, Greenland, Guinea-Bissau, Kiribati, Marshall Islands, Nauru, North Korea, Palestine, Samoa, San Marino, Sao Tome and Principe, Solomon Islands, Tonga, Tuvalu, Vanuatu, Vatican City

The geographic distribution of per capita Google Searches of 6 months is illustrated as follows:

Figure 2: Geographic Distribution of countries by number of Google Searches (per 100,000 people) in 6 months



As apprehended, the searches are spread all over the world. From the UK to the USA, from Europe to Australia, all the major economies showed their concern towards the accident. A bare minimum yet positive correlation ($R^2 = 0.07$) is observed within the GDP per capita with the search volume per capita. The reason behind the correlation to be so low could be that the search volume is exceedingly low for any country when compared to their GDP per capita. Despite that, a positive correlation explains that the variables search per capita is in the same direction as the GDP per capita of the same country.

The world average search per capita is 55 searches for 1 month and 156 searches for 6 months. The data is further showcased by dividing the countries into high income, middle-income and low-income countries by World Bank⁴ and the distribution is as follows:

Table 3: Distribution of 1-month Google Searches (per 100,000 people)

Distribution of 1 month's Google Searches (per capita)			
	High-income countries	Medium-income countries	Low-income countries
Average	88	56	7
Maximum	563	2244	50
Minimum	0	0	0

Similarly, for 6 months, the data distribution are as follows:

Table 4: Distribution of 6-months Google Searches (per 100,000 people)

Distribution of 6 months' Google Searches (per capita)			
	High-income countries	Medium-income countries	Low-income countries
Average	276	143	24
Maximum	1718	4232	188

⁴ Sorted by means of gross national income per capita in 2013 by World Bank

Minimum	0	0	0
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Among the high, medium, and low-income country categories, Brunei, Palestine, and Hong Kong made the highest number of Google searches per capita for both 1 month and 6 months' time-period.

The raw per capita data shows that on an average, countries with high income has made more searches about the accident i.e. their consumers and retailers were more aware than middle-income and low-income countries. This aligns with our argument since majority of the countries importing apparels from Bangladesh belong to the high-income countries.

Empirical strategy

As our aspiration is to measure the transmission of bad news and its impact on trading partners, we are considering the empirically successful Gravity Model of International Trade for our assessment. Introduced by Walter Isard in 1954, the Gravity Model of international trade is a model that predicts bilateral trade flows based on the economic sizes and distance between two units, here countries.

With the help of the model, we plan to attain a cross-sectional variation in an immediate and slightly prolonged negative shock by using data on google searches after the accident. Our dataset considers Bangladesh as a solo exporting country and the rest of the world as importers.

Generally, this model is vastly used to evaluate the international liaison between 2 or more countries, taking the impact of agreements and overall trading relationship in account, with no such strong negative perceptual shock. But considering the Rana Plaza accident, that seemingly has negative impression on the sensitivities of rest of the world towards Bangladesh according to our hypothesis, the Gravity model will help us to estimate the impact of the shock on the trade.

6.1. Variables of the Model

Our dataset includes all the countries⁵ that are either engaged or not in a bilateral trade relation with Bangladesh. The primary variables are listed down as follows:

⁵ Obtained from the List of all countries in the World Wide Diplomatic Archives Index, Office of the Historian, Foreign Service Institute, United States Department of State.

6.1.1. Dependent Variable

Our dependent variable is the logarithmic import volume of each country from Bangladesh. This is going to help us to determine if the independent variables have any significant impact on the import of the countries from the common exporter, Bangladesh.

6.1.2. Independent Variable

Our primary independent variable is the aggregate distribution of the Google searches by all the countries about the Rana Plaza accident, which is adjusted to the population (per 100,000 people) to get a per capita value of Google searches.

6.1.3. Control Variables

Since the dataset had to be extended by all the independent variables that would connect the target partner country, here Bangladesh, with the rest of the world, we include the binary variables such as:

- i. Distance between the importing country and Bangladesh in KM,
- ii. GDP of all the importer countries from 2010 – 2016,
- iii. GDP of common exporter country Bangladesh from 2010 – 2016,

and the following dummy variables:

- iv. Common Colonizer: = 1, if were under the same colonial power with Bangladesh before independence, otherwise equals 0,
- v. Common Language (official and ethnic): = 1, if speaks the same language as Bangladesh, otherwise equals 0,
- vi. Common religion: = 1, if more than 50% of the population follows Islam like Bangladesh, otherwise equals 0,
- vii. Shared Border: = 1, if shares border with Bangladesh, otherwise equals 0,
- viii. Landlocked: = 1, if landlocked, otherwise equals 0,
- ix. Trade Agreement: = 1, if importing country is engaged in any trade agreement⁶ with Bangladesh, otherwise equals 0,
- x. WTO membership: = 1, if importing country is a member of World Trade Organization like Bangladesh, otherwise equals 0,

⁶ Agreements like FTA and/or PFA

All the data of the sample are collected from the Google Trends, United Nations Comtrade Database and French economic research institute: *Centre d'Études Prospectives et d'Informations Internationales*, WTO database respectively.

6.2. Empirical Model

The Gravity Model equation can be reduced to the following equation:

$$Y_{it} = \alpha_i + \beta_0 + \beta_1 * X_{k,it} + \beta_2 * importvolume_{it} + \beta_3 * dist_i + \beta_4 * comcolonizer_i + \beta_5 * comlanguage_i + \beta_6 * comreligion_i + \beta_7 * sharedborder_i + \beta_8 * landlock_i + \beta_9 * tradeagreement_i + \beta_{10} * wtomember_i + \varepsilon_{it} \dots \dots \dots (i)$$

Here the notations stand for the followings:

Y_{it}	logarithmic import volume of each country from Bangladesh
α_i	time-invariant individual effect i.e. Time Fixed Effect
β_0	regressor's intercept
β_1	coefficient of the independent variable
$\beta_{2...10}$	coefficients of the control variables
$X_{k,it}$	number of Google Searches about the Rana Plaza accident by each country (per 100,000 people)
$gdpm_{it}$	GDP of importer countries
$dist_i$	distance between importing country and Bangladesh in KM
$comcolonizer_i$	under common colonial power
$comlanguage_i$	speak common language
$comreligion_i$	common religion of majority population
$sharedborder_i$	common border
$landlock_i$	landlocked
$tradeagreement_i$	under common trade agreements
$wtomember_i$	under membership of WTO
ε_{it}	error term
k	observed period of Google Searches (1, 6 months)
i	country ($i = 1, 2, \dots, 195$)
t	time-period (2010-2016)

6.3. Estimation issues

Our dataset is a Panel data of 195 countries over the period of 7 years (2010 - 2016) and to analyse the impact of all variables that either or not vary over time, we are using fixed effect regression. FE is a panel data estimation mechanism to control time-invariant unobserved individual characteristics and correlate with observed independent variables. In our model we are considering Time Fixed Effect to adjust the analysis for time-specific shocks to the outcome

that apply across the years to the countries and vary from one year to the next. The Least-squared dummy variables or LSDV estimator is used because for non-stochastic variables. In our model, the LSDV estimator is considerably unbiased, consistent as well as linear efficient. The dataset is heteroskedastic because of containing different variation of data in one setting. This issue will be fixed by giving focus on variables with lesser variance than giving more weight on observations with higher variance. The Google Searches are considered '0' from 2010-2012 and 2014-2016 to look at a shock free perception of the accident on trade. Countries with no imports from Bangladesh have their import volume represented by 0 as well.

6. Regression Analysis and Result

The variables are presented in logarithmic forms, thus, can be interpreted in terms of elasticities i.e. any change in the independent variables will lead to a percentage change in the dependent variable. As we run the above model on our panel dataset, the effects of the variables from our regression analysis are as follows:

Table 5: Regression analysis

Variables	Elasticity of Import					
	1 month			6 months		
	coefficient	p-value	t-value	coefficient	p-value	t-value
percapitasearch	-0.000786 (0.0010919)	0.47	-0.72	-0.000308 (0.0004361)	0.55	-0.66
gdpm	.614 (0.505)	0.64	-12.71	.614 (0.505)	0.64	-12.70
distance	-0.000249 (0.0000213)	0.00	-11.40	-0.000249 (0.0000213)	0.00	-11.41
comcolonizer	-2.423 (0.190)	0.00	-13.87	-2.428 (0.190)	0.00	-13.85
comlanguage	4.843 (1.44)	0.00	4.15	4.851 (1.44)	0.00	4.15
comreligion	0.108 (0.258)	0.39	-0.87	0.111 (0.258)	0.39	-0.85
sharedborder	-1.577 (1.052)	0.04	-2.11	-1.577 (1.052)	0.04	-2.11
landlock	-1.847 (0.216)	0.00	-9.59	-1.848 (0.216)	0.00	-9.59
tradeagreement	-0.221 (0.218)	0.96	0.05	-0.223 (0.218)	0.97	0.04

wtomember	1.901 (0.299)	0.00	6.82	1.91 (0.299)	0.00	6.86
_cons	16.586 (0.333)	0.00	46.51	16.921 (0.333)	0.00	46.53

Standard error in parentheses
Number of observations: 1062

Coefficient of the regressor is 16.59 and 16.92, implying the positive import volume of the World from Bangladesh over the time due to their bilateral trade engagement. The sign of the regression coefficient tells us that there is a negative correlation between the independent variable Google Search (per 100,000 people) for both 1 month and 6 months interval with the dependent variable Import from Bangladesh.

During the 1st month after the accident, with each search on Google about it, the 0.079% of the import volume was negatively influenced. After the initial effect, over the 6 months, the import volume from Bangladesh was 0.031% affected by the Google searches. The p-values of the coefficients depict that there is a significant influence of the variables *percapitasearch* on the import volume but the coefficient itself is almost equal to 0 so the level of significance is exceptionally low.

GDP of importer has significant impact, both p-value and coefficient wise, on the import volume of each of the countries. Variable *comreligion*, which shows if the importing country and Bangladesh has majority population following the common religion Islam, has significant correlation with import volume as well. The p-values of variables like *distance*, *comcolonizer*, *comlanguage*, *sharedborder*, *landlock* and *wtomember* fail to prove that there is a significant correlation between these variables and import volume, even though their regression coefficients show variation of results.

The standard deviation of residuals within groups and overall residuals are .08% and 2.67%. The interclass correlation value, calculated from the two standard deviations, shows that 0.001% of the variance in the dataset is due to differences across panels. The R^2 within, between and overall values are 0.37, 1.00 and 0.37 respectively for both 1 month and 6 months' analysis.

7.1 Robustness Analysis

As discussed, we hold the fixed effect for time as because the usual time-invariant bilateral dummy variables remain unchanged over the time. We hold the logarithmic import volume as the dependent variable whereas the Google searches per capita were the prime independent variable and we get a negative correlation between these two over the period. But what if we

make one change at a time and evaluate whether our chosen way was on the right direction, or not? Thus, in this chapter we are going to discuss what would happen if the methodological choices are changed from the analysis that has been done earlier.

7.1.1. Importer Fixed Effect

Instead of time, we consider the importer fixed effect this time. A binary variable *importerid* is generated assigning each importer country to a particular run from 101-295 and remains same over the period as importer time FE is included. After running the regression model (i), we get:

Table 6: Robustness analysis (i)

Variables	Elasticity of Import					
	1 month			6 months		
	coefficient	p-value	t-value	coefficient	p-value	t-value
percapitasearch	0.0000154 (0.0003514)	0.66	0.44	0.0000717 (0.000137)	0.66	0.52
gdp	0.242 (0.133)	0.069	1.82	0.242 (0.133)	0.069	1.82
distance	0	-	-	0	-	-
comcolonizer	0	-	-	0	-	-
comlanguage	0	-	-	0	-	-
comreligion	0	-	-	0	-	-
sharedborder	0	-	-	0	-	-
landlock	0	-	-	0	-	-
tradeagreement	0	-	-	0	-	-
wtomember	0	-	-	0	-	-
_cons	15.42 (0.0687)	0	224.4	15.42 (0.0687)	0	224.4

Standard error in parentheses
Number of observations: 1062

The coefficients of regression are positive yet closer to zero which implies that there is almost no correlation of the Google searches with the import volume. The variables *distance*, *comcolonizer*, *comlanguage*, *comreligion*, *sharedborder*, *landlock*, *tradeagreement* and

wtomember are omitted because of collinearity. Thus, importer variable FE is not a reasonable approach.

7.1.2. Concentrated time-period (2012-2014)

Even though the accident occurred in 2013 and the prime independent variable is extracted from the same year only, we consider a bracket of 7 years from 2010 to 2016 to get an overall impression of the impact of the accident on the import from Bangladesh. But what if we had considered a concentrated bracket of time from 2012 to 2014 i.e. 1 year before and 1 year after the accident and focus on the immediate effect on import, instead of 3 years? To analyse that, we drop all the other years and run equation (i) for the new dataset and get the following:

Table 7: Robustness analysis (ii)

Variables	Elasticity of Import					
	1 month			6 months		
	coefficient	p-value	t-value	coefficient	p-value	t-value
percapitasearch	-0.0007653 (0.0011166)	0.493	-0.69	-0.0002558 (0.0004474)	0.568	-0.57
gdpm	0.651 (0.773)	0	8.43	0.651 (0.773)	0	8.43
distance	-0.0002428 (0.0000327)	0	-7.43	-0.0002463 (0.0000328)	0	-7.43
comcolonizer	-2.267011 (.297)	0	-7.62	-2.269382 (.298)	0	-7.60
comlanguage	4.586483 (2.22)	0.040	2.06	4.589376 (2.22)	0.040	2.06
comreligion	-0.0224933 (0.404)	0.956	-0.06	-0.0163233 (0.405)	0.968	-0.04
sharedborder	-1.456526 (1.62)	0.369	-0.90	-1.459632 (1.62)	0.368	-0.90
landlock	-1.816343 (0.333)	0	-5.44	-1.817069 (0.334)	0	-5.44
tradeagreement	-0.222162 (0.386)	0.565	-0.58	-0.2278064 (0.386)	0.555	-0.59
wtomember	2.046934 (0.472)	0	4.33	2.069109 (0.469)	0	4.40
_cons	16.44207 (0.531)	0	30.96	16.42943 (0.530)	0	31.00

Standard error in parentheses
Number of observations: 451

The regression analysis supports the major finding of our study that per capita Google Searches has extremely low, yet negative impact on the import volume like our main regression analysis. The time-period was further narrowed down to only 2013 but it does not show any result for 1-year time-period. Thus, it is essential to include a certain bracket of time before and after the shock. The coefficients increase and show more correlation within the variables as we add more years of data.

7.1.3. Overall impact on the Economies

For our final robustness analysis, a new variable *lnmass* is generated from the product of the GDPs of the importing country and exporter country (Bangladesh) each year to represent the overall mass of the economies. Keeping other variables and fixed effects remain as it was, the new dependent variable *lnmass* is analysed with respect to the Google searches in the following equation:

$$\lnmass_{it} = \alpha_i + \beta_0 + \beta_1 * X_{k,it} + \beta_2 * importvolume_{it} + \beta_3 * dist_i + \beta_4 * comcolonizer_i + \beta_5 * comlanguage_i + \beta_6 * comreligion_i + \beta_7 * sharedborder_i + \beta_8 * landlock_i + \beta_9 * tradeagreement_i + \beta_{10} * wtomember_i + \varepsilon_{it} \dots \dots (ii)$$

Instead of GDP of the importing country, we consider import volume of each country from Bangladesh as an independent variable and the analysis is as follows:

Table 8: Robustness analysis (iii)

Variables	Elasticity of Import					
	1 month			6 months		
	coefficient	p-value	t-value	coefficient	p-value	t-value
percapitasearch	-0.0016263 (0.0007193)	0.024	-2.26	-0.0006213 (0.0002919)	0.033	-2.13
importvolume	0.15 (0.853)	0	17.61	0.15 (0.853)	0	17.60
distance	-0.0001223 (0.0000134)	0	-9.15	-0.0001232 (0.0000134)	0	-9.21
comcolonizer	-1.639854 (.114)	0	-14.36	-1.639846 (.114)	0	-14.43
comlanguage	4.386579 (0.991)	0	4.43	4.386564 (0.991)	0	4.43
comreligion	0.3852974 (0.151)	0.011	2.55	0.3892618 (0.173)	0.01	2.57
sharedborder	-1.014857 (0.716)	0.157	-1.42	-1.021982 (0.716)	0.154	-1.43

landlock	-0.8486574 (0.132)	0	-6.42	-0.8511913 (0.132)	0	-6.44
tradeagreement	0.1101974 (0.148)	0.458	0.74	0.1075215 (0.148)	0.469	0.72
wtomember	2.051729 (0.138)	0	14.89	2.060298 (0.138)	0	14.96
_cons	49.50017 (0.173)	0	284.73	49.50244 (0.173)	0	284.58

Standard error in parentheses
Number of observations: 1062

The regression shows us a negative correlation between the *lnmass* and *percapitasearch* about the accident. But the p-value is less than 0.05 so we do not give any weight to this analysis.

Hence, the robust analyses indicate that our model is fit enough to illustrate the impact of Google search volume on the trading relationship between the importer and importing countries.

7. Conclusion

Considering the previous studies on the similar field, our case study is unique as here the number of boycotters (countries) are more than the boycotted country, here Bangladesh only. Keeping the key notion of consumer boycott persistent, our variables, time-period, target groups are completely distinguished from the previous studies. However, the result from our study adds weight to each of their conclusions about how these boycotts have spill over effect on the international trade.

There are many possible variables to measure the impact of consumers' boycott towards a specific product or country, but our intention was to explore the impact of the unconventional and modern mean of boycott i.e. digital boycott. Previously, from different cases of boycotts in the history of mankind, we have seen how rallies and protests can change the political and social course of a country. In this modern era, people might not get on to the roads for every issues now and then but they do show their concern and raise their voices by means of social media, news and by checking continuously for updates regarding any issue on the internet; which is extractable by means of the Google searches. The outcome from this consumer boycott, both analytically and in reality, shows that digitization has not only made our lives

easier, but also gave us the floor to create any common platform to speak against moral and social obligation from any and every part of the world.

The analysis of the Rana Plaza accident case study shows that there is no significant effect of digital boycott on trade relations. However, the correlation is negative and even if it is a small figure, for a country whose primary source of growth is the textile and clothing industries, negative publicity harms the goodwill, and the impact was possibly be witnessed on the import volume. Bangladesh is a well-diversified export economy, and the import volume in our dataset contains the aggregate volume of import, not just the textile and apparels. This is because reports show that the toxic working condition is not only in the textile industry but also in the other manufacturing industries as well. The shunning was directed towards the RMG products, but the impact could be on other imported products from Bangladesh as well.

As we speak of what happened in reality, as soon as workplace regulatory amendments were on progress, significant accomplishments were achieved in the RMG industry. Approximately 150,000 safety and health hazards were identified and solved in more than 2,000 RMG factories. Retailing companies came into negotiation with their suppliers to maintain and uphold remediation equipment and safe workplace environment. From the latest inspection report on September 2019, there has been more than 90% initial remediation at 1,120 factories in Bangladesh (Achievements 2013 Accord, 2019). A massive positive outcome in the largest industry of Bangladesh took place at the cost of the deadliest accident ever.

The practical implication of the research is to justly evaluate the power of consumer boycott and utilize them in a correct manner to attain desired socially and morally accepted outcome. The paper further urges to recognise the competence of Google Searches as a tool to explore the influence of any subject on the mass people.

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Appendix

(a)

Table: Number of Google Searches by all the countries in 1 month from the Rana Plaza accident

# of Searches	Countries
6000-6999	United Kingdom
5000-5999	Australia, Bangladesh, Germany, India, Italy, Singapore, United Arab Emirates, United States of America
4000-4999	Canada, Kingdom of Saudi Arabia, Kuwait, Malaysia, Pakistan, Sweden
3000-3999	Austria, China, Denmark, Greece, Hong Kong, Indonesia, Ireland, Japan, Lebanon, Maldives, Netherlands, New Zealand, Oman, Philippines, Poland, Portugal, Qatar, Russia, South Africa, South Korea, Spain, Sri Lanka, Thailand
2000-2999	Argentina, Bahrain, Belgium, Brunei, Colombia, Egypt, Finland, France, Iraq, Israel, Jordan, Mexico, Nepal, Nigeria, Norway, Peru, Romania, Switzerland, Taiwan, Turkey, Uganda, Venezuela, Vietnam
1000-1999	Afghanistan, Algeria, Azerbaijan, Bolivia, Brazil, Bulgaria, Cambodia, Chile, Congo, Costa Rica, Cote d'Ivoire, Cyprus, Czechia, Dominican Republic, Ecuador, El Salvador, Estonia, Fiji, Ghana, Guatemala, Hungary, Iran, Kenya, Latvia, Liberia, Libya, Lithuania, Luxembourg, Mauritius, Moldova, Morocco, Myanmar, Panama, Puerto Rico, Serbia, Slovakia, Slovenia, Sudan, Tanzania, Trinidad and Tobago, Tunisia, Ukraine, Uruguay, Zimbabwe
100-999	Albania, Andorra, Angola, Antigua and Barbuda, Armenia, Bahamas, Barbados, Belarus, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Burkina Faso, Burundi, Cameroon, Croatia, Cuba, Dominica, Ethiopia, Gabon, Gambia, Georgia, Grenada, Guyana, Haiti, Honduras, Iceland, Jamaica, Kazakhstan, Kyrgyzstan, Laos, Lesotho, Liechtenstein, Macao, Madagascar, Malawi, Mali, Malta, Mauritania, Monaco, Mongolia, Montenegro, Mozambique, Namibia, New Caledonia, Nicaragua, Niger, North Macedonia, Palestine, Papua New Guinea, Paraguay, Rwanda, Saint Kitts and Nevis, Saint Lucia,

	Senegal, Seychelles, Sierra Leone, Somalia, South Sudan, Suriname, Syria, Timor-Leste, Togo, Turkmenistan, Uzbekistan, Yemen, Zambia
0-99	Aruba, Cabo Verde, Central African Republic, Chad, Comoros, Djibouti, Equatorial Guinea, Eritrea, Eswatini, Greenland, Guinea, Guinea-Bissau, Kiribati, Kosovo, Nauru, Palau, Saint Vincent and the Grenadines, Samoa, San Marino, Sao Tome and Principe, Solomon Islands, Tajikistan, Tonga, Tuvalu, Vanuatu, Vatican City

(b)

Table: Number of Google Searches by all the countries in 6 months from the Rana Plaza accident

# of Searches	Countries
25000-29999	India
20000-24999	Australia, Bangladesh, Saudi Arabia, Singapore, United Arab Emirates, United Kingdom
15000-19999	Bahrain, Germany, Italy, Kuwait, Malaysia, Maldives, Oman, Philippines, Qatar, United States of America
10000-14999	Canada, China, Denmark, Greece, Hong Kong, Ireland, Japan, Lebanon, Netherlands, New Zealand, Norway, Pakistan, Poland, Russia, South Africa, South Korea, Sri Lanka, Sweden, Thailand, Turkey, Vietnam
5000-9999	Afghanistan, Argentina, Austria, Belgium, Brunei, Colombia, Cote d'Ivoire, Cyprus, Czechia, Egypt, Finland, France, Ghana, Hungary, Indonesia, Iran, Iraq, Israel, Jordan, Libya, Lithuania, Mauritius, Mexico, Morocco, Myanmar, Nepal, Nigeria, Portugal, Romania, Spain, Switzerland, Taiwan, Uganda, Ukraine, Venezuela
1000-4999	Albania, Algeria, Angola, Armenia, Azerbaijan, Barbados, Belarus, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Cambodia, Cameroon, Chile, Congo, Costa Rica, Croatia, Dominican Republic, Ecuador, El Salvador, Estonia, Ethiopia, Fiji, Gambia, Georgia, Guatemala, Guyana, Haiti, Honduras, Iceland, Jamaica, Kazakhstan, Kenya, Kyrgyzstan, Laos, Latvia, Liberia, Luxembourg, Macao, Malawi, Malta, Moldova, Mongolia, Montenegro, Mozambique, New Caledonia, Nicaragua, North Macedonia, Panama,

	Papua New Guinea, Paraguay, Peru, Puerto Rico, Senegal, Serbia, Seychelles, Slovakia, Slovenia, Somalia, South Sudan, Sudan, Syria, Tajikistan, Tanzania, Timor-Leste, Trinidad and Tobago, Tunisia, Uruguay, Uzbekistan, Yemen, Zambia, Zimbabwe
100-999	Andorra, Antigua and Barbuda, Aruba, Bahamas, Burkina Faso, Burundi, Cabo Verde, Central African Republic, Chad, Cuba, Djibouti, Dominica, Eswatini, Gabon, Grenada, Guinea, Kosovo, Lesotho, Liechtenstein, Madagascar, Mali, Mauritania, Monaco, Namibia, Niger, Palestine, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sierra Leone, Suriname, Togo, Turkmenistan
0-99	Comoros, Equatorial Guinea, Eritrea, Greenland, Guinea-Bissau, Kiribati, Nauru, Palau, Samoa, San Marino, Sao Tome and Principe, Solomon Islands, Tonga, Tuvalu, Vanuatu, Vatican City