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Understanding Public Responses on Vaccine Passport as Immigration Policy Using the Big Data Analysis

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Abstract. COVID-19 Pandemic is still happening. In order to prevent the spread of the virus, many of countries closes its border, and change their Immigration policy quickly. As per April 2020, there is 40,000 travel restriction policy implemented globally, consist of 38,293 total border restriction, 5,738 medical restriction (including quarantine), 422 changing for the visa policy, 299 restricted nationality, and 1228 other restriction. The impact of the Immigration Policy, was dropped the International Travel to 74 percent, decrease the Global Gross Domestic Products (GDP) from the tourism sector by 49.1 percent globally in 2021. Global Vaccination is becoming an effective policy to minimize the continuity effects of the pandemic. World Health Organization (WHO) authorities issuing the "Vaccine Passport" which also becoming a mandatory immigration document for the international travel. This research will be analyzed 18.247 tweets worldwide, obtained from March to October 2021 with the *NodeXL* Social Network Analysis (SNA) tools, to understand the main issues, actors, and sentiment analysis of the people on the implementation of the vaccine passport globally, which discussed with the Immigration Law perspective. The results shows if most active users dominated by the political person, and airline accounts who trying to shape a positive public opinion, the main issues there is many of misinformation about the policy implementation, which leads to the negative sentiment about the implementation of the vaccine passport policy. Unequal access to the Vaccine Programme among the International Migrants in several destination countries regarding to their Immigration Status still becoming a primary burden to make the Vaccine Passport policy successful in global level.

INTRODUCTION

The COVID-19 pandemic is still challenging from the early of the year of 2020, counted at 25 October 2021, 244,641,157 cases were recorded. Many countries are trying to limit the number of international travels to minimize the spread of the virus. That limitation changes the pattern of international travel, by made the immigration law becoming very strict globally, which consist of 38,293 total border restriction, 5,738 medical restriction (including quarantine), 422 changing for the visa policy, 299 restricted nationality, and 1228 other restriction [1]. Those major updates in the Immigration law decrease the travel demand, resulted in shifting in behavior, people tend to go to the safer and closer places, not the popular ones [2]. The restriction to travel decrease the number of to 74 percent, decrease the *Global Gross Domestic Products* (GDP) from the tourism sector by 49.1 percent globally in 2021 [3]. The impact of pandemic, in terms of social, economy, and cultural is still uprising until now, the changes in travel policy considered as one of the most important things to do by the government around the world [4].

In order to minimize the impact of pandemic socially and economically, the government should look for the strategic approach, in the same way to decrease the infection rate of the pandemic. Enabling the international travel, which have the direct impact on the export of trade-related services, and direct consumption is one of the most prominent way to increase the global *Gross Domestic Product* (GDP) [5]. Then, the most suitable and safe way available is to increase the vaccination rate globally, because the current available COVID-19 vaccine is relatively safe [6]. However, the group of people who refuses vaccination is still relatively high, because of the misleading in information and lack of access to the vaccination center, especially for the refugee and migrant workers [7]. Then the incentives and penalty schemes are important, from the fine, financial payment to the exemption from the employment

[8]. The Vaccine Passport is one form of the incentives to increase the vaccination rate and enabling the international travel safely.

Vaccine passport itself can be described as the documentation that someone has tested negative for specific illnesses or has been protected against them [9]. The implementation of the vaccine passport is not a new thing, it can be tracked back in the early of 20th centuries, when the Spanish flu became a pandemic around 1918 to 1920s, people who move from one European Countries to other should have “*medical certificate*” page on their passport [10]. The uses of the medical certificate as the proof to travel keep developing when the World Health Organization (WHO) implemented the “*yellow card*” as the travel requirements for some of the region which still in the cholera, rubella, or the yellow fever in the 2005 [11]. The internationalization of the vaccine passport is still on going, *Digital Vaccine Certificate* used in the European Union (EU) and ASEAN territory, *AOKPass* in the United Arab Emirates and *Common Pass* which used by the world major airline.

However, the role of the medical related documents as mandatory documents for travel, and supporting the vaccination process always creating a pros and cons in society. The refusal is always happened since the implementation of the first vaccination attempts in the 1796 by the Edward Jenner, then its developing to the formation of the anti-vaccine society in London at 1853 to spread the anti-vaccination movement, otherwise the vaccine refusal is one of the significant obstacles to disease eradication [12]. Also, in the 2015 the ‘*Anti-Vaxxers*’ word in social media successfully influence the public opinion to refusing vaccination attempts by the government in order to eradicate the outbreak of measles began in Disneyland and expanded across the United States, Canada, and Mexico by creating the vaccine hesitantly [13]. The public opinion becoming very important to increase the successful implementation for the vaccine passport policy in the society.

For the first time, this research will be trying to use analyze 18.247 tweets worldwide, obtained from March to October 2021 which using the #*VaccinePassport* Hashtag with the *NodeXL* Social Network Analysis (SNA) tools, to understand the main issues, developing public opinion, involved actors, and sentiment analysis of the people on the implementation of the vaccine passport globally. Then, the findings will be analyzed by using the International Immigration law context to assess the legal issues which may happening in the implementation of the Vaccine Passport worldwide. Then, the required steps can be taken by the authorities to tackle the problem which may occurred when the vaccine passport policy is implemented.

METHOD

The research will be conducted with the qualitative method, with the Social Network Analysis (SNA) approach. The twitter platform was chosen as the SNA database to conducting the research about the use of the Vaccine Passport during the COVID-19 Pandemic because of the two main reasons. Firstly, Twitter has changed how the member of society are self-production, communicate, and emphasize the power of relation between them. The twitter role in shaping a social movement can be tracked in 2011, when twitter is successfully gathered people to create the revolution in Egypt, Tunisia, Libya and Algeria [14]. Secondly, twitter is one of the big data produced platform which is updated in a real-time, and most used in the Internet after Facebook for the people to express their opinion about and issues. Thirdly, twitter is a microblogging website which provided all of its content as public use, visible to anyone who chooses to search and follow users, and accessible via Twitter's own Application Programming Interface (API), which, depending on the methodology, is available via Twitter's own Application Programming Interface (API), then the uses of the Twitter data by utilizing the Developer accounts is considered legal [15].

The social network itself is made up of a finite number of vertices and the relationships (or connections) that are specified between them. The most influential, prominent, or central players are identified using statistical measures; hubs and authorities are identified using link analysis methods; communities are discovered using community detection techniques; and information propagates through the network using diffusion algorithms. The SNA analysis is one of the analytical methods which can identify the structure of an issues which happening in the society precisely [16]. The Data mining steps can be explained as follows:

The SNA analysis is based on the idea that all big databases include non-random, legitimate, innovative, helpful, and eventually intelligible information. The approach chosen depends on the kind of data (structured, unstructured, or semi structured) and the study' goal. In general, Social Network Analysis can be described as the process in collecting, mapping, measuring, and analyzing social interactions between people, teams, and organizations [17].

TABLE 1. Data Mining tasks and techniques

Data Mining Task	Description	Techniques
Segmentation or Clustering	Clustering the groups that describes the data	<ul style="list-style-type: none"> ● Cluster Analysis
Classification	Add the labels to the datasets	<ul style="list-style-type: none"> ● Bayesian classification ● Decision tree induction ● Artificial Neural Networks ● Support Vector Machine
Association	Analyzing the relation between the users, and conversation clusters	<ul style="list-style-type: none"> ● Association rules ● Bayesian networks
Deviations	Wrapping up the items, to understand the information spread	<ul style="list-style-type: none"> ● Cluster analysis ● Outlier detection ● Evolution analysis
Trends	Lines and curves summarizing the database, often over time	<ul style="list-style-type: none"> ● Regression
Generalizations	Compact descriptions of the data	<ul style="list-style-type: none"> ● Sequence pattern extraction ● Summary-rules ● Attribute-orientated induction

The SNA analysis allows for the examination of patterns and types of interactions between actors, with these actors (individuals, groups, or organizations) represented as structural nodes in a network map and relationships (ties or linkages) between these nodes. SNA provides for the examination of a user's function in a discussion network, as well as the characterization and mapping of network relationships and the analysis of a system's structure. SNA is a theoretical framework for investigating the interactions of actors in a situation. In conducted SNA analysis, several items which must be analyzed can be explained as follows [18]:

TABLE 2. Parameters in conducting the Social Network Analysis (SNA)

Parameters	Explanation
Degree	Relation between actors, which influence the conversation network in twitter network, higher degree value meaning the actors is actively stating the opinion, and the opinion is retweeted by other users.
Degree Centrality	The degree centrality is the power of an actors to influence the conversation network about an issue by retweeting the opinion by the other users, higher value of degree centrality meaning those users can influence the conversation network.
Betweenness centrality	Actors who can connect two subgroups in a network are ideal for serving as mediators or bridging structural gaps. Higher value of betweenness centrality meaning more conversation group/network is connected by those actors.
Eigenvector Centrality	Actors who connect the between actors who have the high value of betweenness centrality, then the issues in a conversation network can be spread in the other network across the Twitter platform

After calculating those parameters value by using the specific software, the SNA analysis will identify the actors and the role of them in a conversation network, the actors can be categorized as follows Table 3 [19].

Finally, relationships can also be weighted or valued, and this can be used to assess the strength or frequency of information-sharing in a network. By using the method, the study aimed to Understand the Public Responses on the Implementation of the Vaccine Passport Worldwide. Then, the results of analysis will be explained by using the Immigration Law perspectives.

Data

The dataset used in this research consists of 18.247 tweets worldwide, obtained from March to October 2021. The main reason for utilizing the data in that period is because the vaccine passport is first announced by the *European Union (EU)* as the Digital Vaccine Passport in March 2021, and from that time, the use of Vaccine Passport is implemented widely in many countries' hereafter. By details, the dataset profiles which used in this research can be described as follows Table 4 [19].

TABLE 3. SNA Actors Classification in a Conversation Network

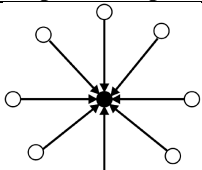
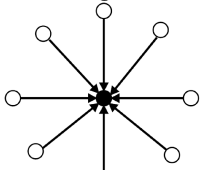
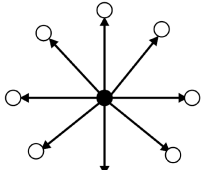
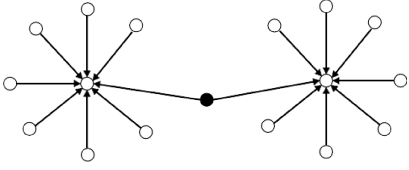
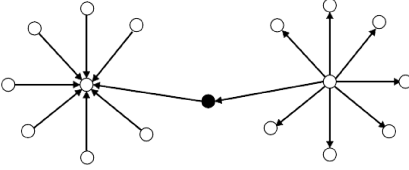
Classification	Description	Graph Description
Conversation Starter	A person in a network with a large number of "in-degree" linkages but few or no "out-degree" ties is referred to as a discussion starter. The conversation starter is the one who initiates the original subject and information flow in the network.	
Influencer	An influencer is a network's opinion leader. A network's influencer has a lot of "indegree" relationships but few "out-degree" links. Influencers sway the opinions of other users in the network by often posting tweets that are retweeted.	
Active Engager	An active participant in an online discussion network with a large number of "out-degree" links but few or no "in-degree" linkages. In an online discussion network, an active engager is eager to disseminate knowledge and build relationships.	
Network Builder	Despite the fact that the online discussion network has a few "out-degree" and few or no "in-degree" linkages, the network architect plays an essential function in the network. The primary function of a network builder is to connect two or more influencers in a network.	
Information Bridge	A person in an online discussion network who has a few "in-degree" and "out-degree" ties is known as an information bridge. The function of the information bridge is to let network influencers and active engagers connect with other users.	

TABLE 4. Dataset Descriptions

Graph Metric	Value
Graph Type	Directed
Vertices	16662
Unique Edges	18004
Edges With Duplicates	1768
Total Edges	19772
Number of Edge Types	5
Tweet	772
Retweet	16839
Replies to	756
Mentions In Retweet	778
Mentions	627

Source: Data Analysis

The graph type is directed, which means the relation between actor is mapped from one user to other user without third parties as intermediary, the issues is passes directly without further action such as retweet. Then, the vertices,

which means the nodes or entities in a conversation network counted as 16.662 nodes and total edges which can be described as the connection between nodes in a conversation network[20], which can explain as the *tweet, retweet, replies to, or the Mention in Retweet activities*, counted as 19.772 edges.

The datasets used in this research collected by using the hashtag, the hashtag itself can be described as the word which used as the distributing and archiving specific information in the social media platform[21]. The uses of the hashtag in the social media platform itself can be identified with the 6 functions, which are Self Presentation- *users who motives as the self-branding or promotion by using relevant hashtag*, Inventiveness-*users who are trying to make post with the entertaining purposes*, Chronicling-*Users who documenting their post by using hashtag*, Information Seeking-*Users who trying to find specific information by using the relevant hashtag*, Venting-*Users who express the negative emotion by using the hashtag*, and Etiquette- *Users who using hashtag because the other do so*[22]. The datasets not only include the tweets which contains #Vaccinepassport hashtag, but also the second hashtag and so on can be contained the different hashtag, but still related to the implementation of the Vaccine Passport Worldwide. The all of the hashtag used in this research as follows Table 5.

TABLE 5. Used Hashtag in the Dataset

Used Hashtag	Entire Graph Count
#novaccinepassportanywhere	146
#gript	132
#covid19	120
#novaccinepassportsanywhere	119
#novaccinepassports	108
#vaccine	86
#sk	84
#togetherdeclaration	76
#together	76
#coronavirus	74

Source: Data Analysis

The dates for the tweets were picked between March to October 2021, for a variety of reasons. First, the uses of Vaccine Passport were first announced in China at 10 March 2021 as the mandatory Immigration documents[23] . Secondly, in that period many of the country in the world are implemented Vaccine Passport as the mandatory document for travel in 135 countries (as per 04 November 2021), in the same time, many of the protest and supportive voices are started to raise[24] . Third, The Forth Wave of COVID-19 pandemic is begin at around July 2021, in the United States and spread around the world[25]. The spread of the fourth wave increases the infection rate more than 50 percent will influence the public opinion and awareness.

Tools

The analysis tools in this research will conducted by using the Node XL software and Gephi Mapping Software version 0.9.2. The Node XI is developed by the Social Media Research Foundation in 2010, as the Extension for the Microsoft Excel analysis tools. The Node XL offering the complete standard for the Social Network Analysis, by utilizing several algorithms to explain how the datasets will be outlined. The *Clauset-Newman-Moore* technique will be used in this study to comprehend related vertices and divide them into groups. The data will then be organized into multiple databases in order to examine the discussion starter, influencer, active engager, Network builder, and Information Bridge.

After the datasets analyzed by the NodeXL software, the tools which will be used for mapping the conversation network is Gephi Mapping Software version 0.9.2. Gephi is open-source software which developed by Gephi Consortium. Gephi is a program that allows users to explore and comprehend graphs. The user interacts with the representation, manipulating the structures, forms, and colors to expose hidden qualities. During data sourcing, the purpose is to assist data analysts in making hypotheses, intuitively discovering patterns, and isolating structural singularities or defects. It's a useful supplement to traditional statistics, as visual thinking with interactive interfaces has been shown to help with reasoning.

RESULTS AND DISCUSSION

The Information extracted from the datasets is drawn as the big portrait by using the Gephi mapping software, with the results can be described as follows:

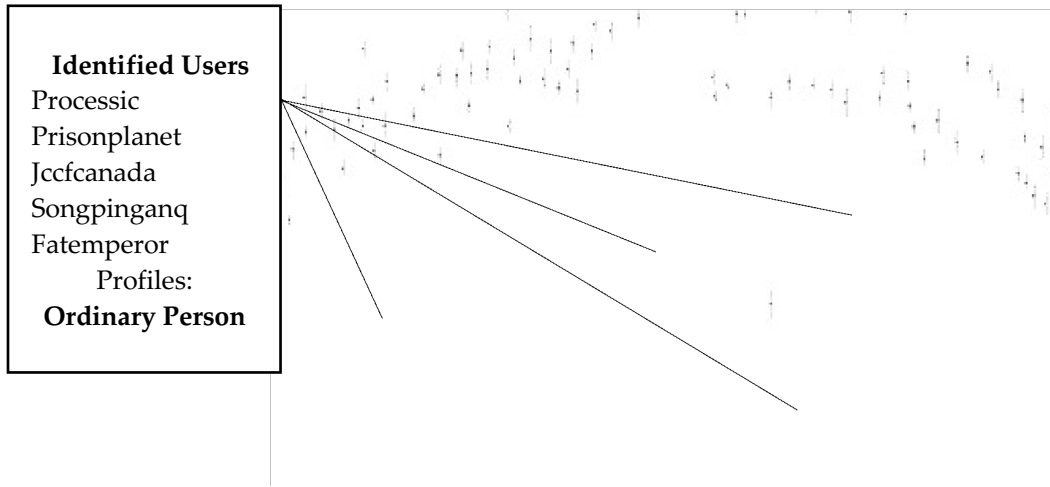


FIGURE 1. Gephi Mapping Results
Source: Data Analysis

Most Active Users

After conducting data analysis, the value of betweenness centrality which happened in the information vertices between node/users is weighted. The higher the value, which means those users has influencing between the different conversation cluster to spread an opinion from the conversation starter about a specific issue. the results of the most active users, can be seen as follows:

TABLE 6. Most Active Users Ranked by Betweenness Centrality (Issue Spreader in the Conversation Network)

Top 10 Vertices, Ranked by Betweenness Centrality	Betweenness Centrality
processic	65547177
prisonplanet	21509013.79
jccfcanada	16662816.24
songpinganq	11698438.79
fatemperor	3349839.403
electionwiz	2980175.243
essexpr	2893539.941
lcg_tiamat	2566806.16
arwenstar	2246503.592
daisypudey	2104145.844

Source: Data Analysis

From the users above, can be concluded if most of the Vertex's nodes/users are ordinary person, **without any interruption or information source from the trusted government or media account to clarify the information about the vaccine passport.**

Top Tweeters

The top users can be described as the twitter users who are start the conversation by posted their opinion to their accounts, and the text is act as the powerful effects in build the public opinion [26]. Based on the datasets analysis, the user who their tweets are retweeted, replied or favorited can be seen as follows:

TABLE 7. Top Users in Conversation Network

Top Tweeters in Entire Graph	Entire Graph Count
tomthinkitsmind	2996126
americanair	2353583
threadreaderapp	2204821
souljahsingh	1650235
phildecarolis	1532972
world_news_eng	1357894
novembris92	1326809
kiimiie9419	1252226
drmydearr	1243744
delta	1189006

Source: Data Analysis

The user's profile can be identified as: @tomthinkitsmind (Ordinary Person – Influencers), @americanair (Company – Airlines), @threadreaderapp (Company – Startup), @souljahsingh (Celebrities), @phildecarolis (Politician), @ world_news_eng (News Agency), @ novembris92 (Ordinary Person), @ kiimiie9419 (Ordinary Person), @drmydearr (Ordinary Person), @Delta (Company) – Airlines). Can be concluded if the public opinion in the conversation cluster related to the Passport Vaccine is built by the Ordinary Person, Company, Politician, and News Agency.

Top Mentioned Users

The top mentioned users can be described as the users who need to be involved in the conversation network, to balancing the public opinion about certain issues [27]. From the data analysis, the top mentioned users in the Passport Vaccine Conversation Network twitter can be seen as follows:

TABLE 8. Top Mentioned Users in the Conversation Network

Top Mentioned in Entire Graph	Entire Graph Count
daily_express	219
ben_scallan	132
bbcscotlandnews	46
prairietara	42
jack4nj	42
cilliandegascun	29
fordnation	19
newworldhominin	14
sabivm	14
dfisman	14

Source: Data Analysis

The top mentioned users' profiles are @daily_express (News Agency), @ben_scallan (Politician), @bbcscotlandnews (News Agency), @prairietara (Activist), @jack4nj (Politician), @cilliandegascun (Activist - Virologist), @fordnation (News Agency), @newworldhominin (Activist), @sabivm (Activist), @dfisman (Activist). From the data can be concluded if the most of users are mentioned News Agency, Politician, and Activist related to the public opinion of the Passport Vaccine conversation network.

Sentiment Analysis

Sentiment analysis can be described as the procedure that uses Natural Language Processing to extract attitudes, opinions, perspectives, and emotions from text, audio, tweets, and database sources (NLP). Sentiment analysis is the process of categorizing textual opinions into categories such as "positive," "negative," or "neutral." [28]. In this research, the NLP analysis is performed by using the Microsoft Azure, which proved effectively to conduct text

analysis, with have more than 3550 English word to identify the positive, negative, Angry/Violent, and non-categorized word in a text-based platform [29].

TABLE 9. Sentiment Analysis in Conversation Network Analysis

Sentiment	Counted
Positive Sentiment	4274
Negative Sentiment	10999
Angry/Violent	15
Non-categorized Words	451997

Source: Data Analysis

From the data analysis, can be concluded if most of the twitter users have negative responses on the Vaccine Passport Policy in the Passport Vaccine Conversation Network.

Most Favorite Tweets for Retweeted

Based on the data analysis, the favorited tweets must be identified, because the favorite tweets are creating the public opinion by increasing the public engagement of a specific issues, by using the high number retweet activity[30]. The 10 most favorited tweets in the Vaccine Passport conversation network can be seen as follows Table 8.

TABLE 10. Most Favourites Tweets in the Conversation Network

Username	Tweets	Favorites Counts	Users Profiles
donaldjtrumpjr	Let me get this straight... some Democrats want American citizens to have a Vaccine Passport to travel freely within the United States but not an ID to vote?!? Clowns!!! 🤡🤡🤡	151952	Politician
realcandaceo	Did you know you need a vaccine passport to enter all businesses in NYC but you do not need one to enter the subway. So, the most crowded place in New York City—the subway—does not require proof of vaccination. A reminder that Covid is not about science, it's about compliance.	59688	Activist (Book Author)
comicdavesmith	I really don't think people understand just how bad this Covid Passport actually is. Look into it, it's not just checking that people got the vaccine. It is setting up a national caste system and a spying apparatus unlike anything in our history. This is it. The big one. Fight it	47362	Activist (Book Author)
partisangirl	Paris police beat woman who tried to go shopping at the mall without a vaccine passport. https://t.co/twZiKIpX2P	44544	Activist
disclosetv	NOW – Large protest against the vaccine passport in #Rome, Italy. From October 15, the health pass will be compulsory for Italians to get to their places of work, both in the private and public sectors. https://t.co/cx8Vbo6TB	25283	News Agency
emeraldrobinson	The pandemic is to force you to get the vaccine. The vaccine is to force you to get the vaccine passport. The vaccine passport is to force you into the social credit system. The social credit system is to force you into obeying the government.	23562	Politician
copenhagen_1776	My vaccine passport finally came 🏠 https://t.co/K9jY2J7pH3	20487	Ordinary Person
hillaryclinton	Have any Fox viewers in your life? Make sure they know that what the network says on TV doesn't match its stance in real life. https://t.co/518KLt8ney	16559	Politician

electionwiz	WATCH: Enormous demonstration in Rome against the government's vaccine passport, which is set to become mandatory for employment next week. https://t.co/E901TBLFY	16008	News Agency
ianbrown	If the vaccine works why have a vaccine passport? If the vaccine doesnt work why have a vaccine passport?	12827	Celebrities

Source: Data Analysis

The research found if most of the favorited tweets are came from the politician, Activist, News Agency and Ordinary People. Still, the government or related organization is not involved in the conversation network. From the research findings above, can be concluded if there are 3 main interesting fact about the Vaccine Passport Policy are expressed in the conversation network in the Twitter platform by using #VaccinePassport Hashtag. Firstly, the actors who spread the opinion about the passport vaccine (counted by the high number of betweenness centrality) can be identified as the ordinary person, as well as the conversation starter which act as the top tweeters can be identified as the ordinary person, celebrities and company, without any users or account from the official government or organization who give such clarification or the explanation about the Passport Vaccine. The first finding emphasized if the Celebrity politics on Twitter may exacerbate political division among Twitter users by delivering one-sided information to those who do not have access to a diverse range of sources, which resulted in the information bias[31]. Secondly, most of the users in the Vaccine Passport conversation network is not satisfied with the implementation of the vaccine passport policy, it can be proved by the 10999 negative sentiment, 4274 positive sentiment, 15 Angry/Violent sentiment, and 451997 uncategorized words. Thirdly, can be identified from the most favorites retweeted tweets which influence the public opinion in the conversation network dominated by politician, activist, ordinary person and news agency, with the contrary voices. The multi actor role in the conversation creating polarization, which increase people distrust[32].

Discussion

The research finding is focusing on the Implementation of the Vaccine Passport as one of the parts of the prevention act to decrease the spread of COVID-19 Pandemic in the global level, and the mapping of the conversation network is successfully conducted. China, as the first country which implement the passport vaccine in 10 March 2021 followed by 136 countries globally. Then, started from that time, the passport vaccine becoming an additional official immigration document, which must be carried by the person who travelling to other countries. Counted from the April 2020 to September 2021, 40,000 travel restriction policy existed globally, consist of 38,293 total border restriction, 5,738 medical restriction (including quarantine), 422 changing for the visa policy, 299 restricted nationality, and 1228 other restriction. The impact of the Immigration Policy, was dropped the International Travel to 74 percent, decrease the Global Gross Domestic Products (GDP) from the tourism sector by 49.1 percent globally in 2021. Vaccine Passport is becoming an alternative policy to minimize the continuity effects of the pandemic, and increase the global GDP from the travel and tourism sector.

The first discussion will explain about how the policy is developed. The Passport Vaccine policy which can be categorized as the foreign policy, with mostly used the selective principle[33], to protect the state sovereignty. of the state. But the vaccine passport seems to be developed as the "*policies without public*", which can be described as the policy implemented by the government or the related entities because the collective problem is happening[34], such as at the period of the COVID-19 crisis, which influencing the global migration flow to drop more than 74 percent and decrease the global GDP about 30 percent [35]. The "*policies without public*" statement can be proved by the research findings, found if not even a single government or related organization give a public brief, or involved in the conversation network about the vaccine passport. The public opinion in the conversation network was built by the information which came from the *Celebrities, Activist, and Ordinary Person*.

The second discussion will explain about the International Immigration policy. Based on the DEMUG cross-country data, after the 2008 economic crisis, most of the developed countries, implemented the *selective policy*, by neglecting *reciprocal* principles, resulted in more restrictive migration policy to anticipate the illegal worker[36]. Afterwards, post 2015 migrant crisis also have the further impact in the migration policy, especially in the European Union territory, whereas 53.1 percent of the family reunification visa were rejected in Denmark and Sweden because of the implementation of *selective policy*[37]. When the COVID-19 becoming global pandemic, the migration policy also follows the trends to close its border. On the other hand, the absence of the global legal aspects by the authorities (WHO, etc) in implementing vaccine passport policy creating chaos, and misunderstanding between countries

worldwide, the standard of measures, accepted vaccine, and form of the vaccine passport (digital or physical form) make confusing around the globe.

The third discussion will explain about the negative sentiment about the vaccine passport as the Immigration policy. In the research findings, 10999 users are having the negative sentiments, and only about 4274 users who have the positive sentiment. Known if most of the favorite's tweets are published by the politician, news agency, activist, celebrities, and ordinary person, which almost of their comments are criticizing the vaccine passport policy. Some of the most influential users, such as @donaldtrump, @realcandalceo, @comickdavesmith, @partisangirl to @hillaryclinton argued three main points. First, the vaccine passport is still in very start of policy making, and categorized as the policy which made without public engagement, even in the United States, the implementation of vaccine passport is still creating hazzle in some places. Secondly, most of the tweets are said if the vaccine passport creating a hazzle to do their job. Thirdly, the implementation of vaccine passport creating caste system in international level because of the immigration status of the vaccine receiver.

Thus, the access on the vaccine regarding to the Immigration related law status is becoming a big challenge to implement the vaccine passport policy. As the facts, 272 million people are International Migrants, 25.9 million are refugees, 41.3 million are displaced or stateless[35]. Based on the data analysis many of the users who declared to fight the implementation of the vaccine passport as official immigration documents are also dominated by the migrants, by using the #migrants, #vaccineformigrants hashtag.

The access to the vaccine also becoming a main challenge who influence lot of the people to refuse the vaccine passport policy. In the United States, at the year of 2019, counted if 45.8 million of its citizens is migrants (born outside of the United States), and most of them are cannot be vaccinated because of their immigration status. because the 1996 Personal Responsibility Work Opportunity Reconciliation Act (PRWORA) is regulated if the authorized migrants cannot access the medical aid during their first 5 years stay in the United States, known if 23 percent authorized migrant, and 45 percent of undocumented migrant did not even register for any health insurance[38]. The same circumstances also happening in the United Kingdom (UK), and European Union (EU), the Central European Asylum System (CEAS) which regulated the status of asylum seeker and refugees, based on the research conducted in the 20 migrants' group randomly, only 6 percent of the migrants group members are vaccinated, found if many of migrants are experiencing vaccine hesitancy and low awareness to participate the vaccine program because there is burden in immigration law regarding to the equitable access on health access and no community approach by the government to conduct the vaccination program[39].

Moreover, EU territory as the home of the migrants, also didn't have yet the common law about the access to vaccine for the migrants In Germany, the vaccination program addressed for the migrants at the second priority group, without any racial or cultural burden[40]. However, in Spain, the migrants are divided into the two main groups, called "People who live or work in communities or enclosed environments" and "people who belong to socioeconomically disadvantaged demographics.", which the vaccination program will create non equal access for the migrants[41]. The Polish government also have the almost same policy with the Spain, emphasized if the vaccination program stipulates that everyone lawfully residing in the country, whether on a temporary or permanent basis, can get vaccinated, thereby barring irregular and undocumented groups[42].

Then, from the Immigration aspects it can be concluded if there is many of challenges to be tackled to implement the COVID-19 successfully. First, the minimal involvement of the Government and related organization, creating the information bias in the Vaccine Passport conversation cluster in the Twitter Platform, identified if the common public opinion are built by the Politician, Activist, News Agency, and Ordinary people. Second, the access to the vaccination is still not equal, especially for the migrants, the immigration status of the migrants made the access to the vaccination can disturb the government efforts to reduce the spread of COVID-19 globally. The Unequal access, potentially influence the voices of approximately 272 million migrants worldwide to create a social movement against the implementation of the Passport Vaccine Policy, as identified in this research.

CONCLUSION

During the COVID-19 Pandemic known if the international travel activities drop to 74 percent, decrease the Global Gross Domestic Products (GDP) from the tourism sector by 49.1 percent globally in 2021. Global Vaccination is becoming an effective policy to minimize the continuity effects of the pandemic. World Health Organization (WHO) authorities issuing the "Vaccine Passport" which also becoming a mandatory immigration document for the international travel. This research will be analyzed 18.247 tweets worldwide, obtained from March to October 2021 with the NodeXL Social Network Analysis (SNA) tools, to understand the main issues, actors, and sentiment analysis

of the people on the implementation of the vaccine passport globally, which discussed with the Immigration Law perspective. The results shows if most active users dominated by the politician, activist, celebrities, news agency, and ordinary person twitter users accounts who trying to shape a positive public opinion, the main issues there is many of misinformation about the policy implementation, which leads to the negative sentiment about the implementation of the vaccine passport policy. Also, the limited access to the vaccination, because of the Immigration status for the international migrants is still becoming main concern to make the vaccine passport policy can be implemented successfully globally.

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