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Social Media and The COVID-19 Response: A Case Study of Ministry of Business, Innovation and Employment (MBIE) in New Zealand

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Abstract

COVID-19 pandemic is spreading across the globe, causing huge losses to humans and changing people's lifestyles. New Zealand has also suffered from this fatal virus outbreak. Social media has been used by governments from many countries for communication about COVID-19, but the research on social media used in COVID-19 remains limited. This research aims to study how the leading New Zealand business agency, the Ministry of Business, Innovation and Employment (MBIE), used Facebook to disseminate COVID-19, and how businesses and the public benefitted from it. Facebook posts from MBIE published over two months from March 18, 2020, to May 12, 2020, as well as user reviews were collected and thematically analysed. Before the research was conducted, an Official Information Act request was submitted to MBIE and an approval confirmation was received for using any publicly available information released by MBIE. The findings indicate Facebook was used by MBIE as a comprehensive channel to address COVID-19, as well as being an avenue to interact with businesses and people, and businesses and people benefitted from it in multiple aspects.

Keywords: COVID-19; Facebook; MBIE; social media; business, New Zealand

I. Introduction

A novel coronavirus known as COVID-19 was detected for the first time in the late December of 2019 in Wuhan City, China, and have affected over 170 countries and territories, killed over 30,000 lives and infected nearly 700,000 people by March 30, 2020 (Holly et al., 2020; Mary et al., 2020). New Zealand has also suffered from this virus outbreak since the end of February 2020, and the nation declared a national lockdown at midnight 25

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March and the whole country went into self-isolation for at least 4 weeks (Susan, 2020). COVID-19 has caused a hugely serious impact on the whole economy in New Zealand, all non-essential businesses were forced to close, hundreds of businesses may face being closed permanently, and thousands of jobs disappeared overnight (Ben, 2020). Industries like tourism and catering were hit mortally by the pandemic quarantine, and thousands of other industry businesses were also damaged (Jason, 2020). At this stage, organisations look very different to usual and have to tackle many challenges to mitigate the threat of disruptions including developing effective home working strategies, protecting employees and customers, maintaining supply chains and robust finance (KPMG, 2020).

In recent years, people rely on social media more and more for gaining information and knowledge and we spend more time on it every day. In New Zealand nearly 75% of the population is active on social media and this number is steadily increasing every year (Christopher, 2019). Moreover, social media has been increasingly adopted by governments for risk and crisis management and communications. With a macro mass base, governments can use all types of social media platforms to raise public awareness about emergencies, monitor and control active situation developments for better preparedness, release information and warnings to the public, collect funding and support, improve partnerships between national and public organisations and individuals, relieve anxiety and panic among the public, build trust, and so on (Cecile et al., 2013). During COVID-19, New Zealand Government's leading business-facing organisation, the Ministry of Business, Innovation and Employment (MBIE), used its Facebook platform to release real-time news, policies and information to businesses and the public to keep them informed, as well as collecting user reactions, thus they could take actions or measures to help prepare for and relieve the disease spread.

Many studies have been conducted to explore different functionalities of social media in COVID-19. For example, social media can be used as an effective data source to gather mass and valuable data, to mine and draw public opinions and survey public concerns during COVID-19 (Han et al., 2020; Lorene et al., 2020; Shahmir et al., 2020). And social media can serve as an important platform by governments and news institutions to communicate information to people, and can boost public awareness and preparedness in COVID-19 (Chan et al., 2020; Viet-Phuong et al., 2020). Pandemic-relevant data on Twitter provide insights for city officials during COVID-19 and can help inform health agencies and other government departments future risk strategies (Eric, 2021; Shahi, et al., 2021; Wang et al., 2021). For the previous pandemics, studies have suggested social media was used for managing a disease outbreak (Brenda, 2020; Lwin et al., 2018), for tracing or predicting a pandemic (Feng & Hossain, 2016; Ritterman et al., 2009; Roberstson & Yee, 2016; Vasileios & Nello, 2010; Vinay & Shishir, 2015), for understanding public perception (Szomszor et al., 2011), and as a data source (Sharma et al., 2017; Pulido et al., 2020; Roy et al., 2020). However, there has been little research conducted based on an epidemic in New Zealand, and there is no research yet about how government organisations utilised social media to address COVID-19.

This study aims to explore how the top business agency MBIE used its social media platform Facebook to address COVID-19, to analyse the interactions between MBIE and businesses and people, and to understand how businesses can make use of social media to mitigate disruptions during a pandemic outbreak. We expected that the findings offer valuable information and insights for governmental organizations about using social media to communicate an emergency, also for all public and private organisations from all sectors to improve future pandemic planning and response.

II. Methodology

The study adopts a mixed methods research design with both quantitative and qualitative research approaches, involving a structured and detailed thematic content analysis on the posts and comments from MBIE Facebook. Quantitative research relies upon numeric data, while qualitative research is based on non-numerical data to interpret people's behaviour and interactions (Vibha et al., 2013). In this study data sources include not only fact data like the number of Likes and Shares in a Facebook post, but also text data that needs to be interpreted, like a Facebook post by MBIE. Quantitative approach was used to collect data in quantitative form and analyse it statistically, and qualitative method, thematic content analysis, was used to analyse sources from MBIE Facebook posts and user comments to find out themes of various aspects from data.

The analysis of posts and comments covered two months - from March 18, 2020, to May 12, 2020. The set time frame covers three different stages during COVID-19, that are one week before Level 4 lockdown, five weeks of lockdown period, and two weeks in Level 3 in New Zealand, in order to provide more comprehensive evidence to explore research questions. This study gained approval from the MBIE to use any publicly available information released by MBIE, and was granted ethical approval by the ICL Research Ethics Committee.

Data Collection and Refinement

Among the four common data collection approaches stated by Creswell (2013), the method of audiovisual materials was adopted, which contains social media messages, the data source of Facebook posts and user reviews are regarded as social media messages in this study.

A manual data collection method was adopted: viewing and collecting COVID-19 related posts and relevant comments from users during the set time on MBIE Facebook page. We carefully examined every publicly posted messages, user reviews (likes, shares and comments by users) and corresponding replies by MBIE and users between March 18 and May 12, 2020 from the MBIE Facebook page. We excluded a COVID-19-irrelavant post written on March 18, 2020 as MBIE began addressing COVID-19 since March 19, 2020. As such, user comments that apparently showed little practical contribution to this research objective or that were posted more than once by the same user were recognised as useless data and were discarded. Two initial Excel tables were designed manually to organise the raw data collected, one of which reflected characteristics of the Facebook post and the other the characteristics of user comments, forming two initial datasets.

The entire data collection process for this study followed steps: (1) Read through all the posts by MBIE during the set time frame carefully and select those messages related to COVID-19; (2) Read the comments under those chosen posts to find out what was discussed between MBIE and the public; (3) Shape and develop two initial data tables for organising the raw data according to the understanding during reading the data, grasping the critical features of the data that were related to the research questions; (4) Collect and put the raw data in the initial data tables for further analysis.

In the end, 29 posts and 170 comments during the set time frame were selected and collected into the pre-designed tables. Among the 170 comments, 75 comments were directly under each post and 95 comments were replies from MBIE and other users. We excluded all the replied comments and only 71 direct comments under each post were included finally for further analysis.

Data Analysis

A mixed methods approach was adopted for data analysis in this study. Quantitative analysis was used to analyse numerical data and qualitative analysis was utilized to interpret social contexts and people's behavior and interactions (Babbie, 2010; Saunders et al., 2016; Vibha et al., 2013).

For the dataset "characteristics of a post", the number of posts under each topic and their proportion to the total were counted and compared, in order to analyse them from a holistic perspective. Similarly, for the dataset "characteristics of a comment", relevant statistics on the number of comments within each topic and their percentage were gathered to understand what businesses and users were most concerned with regarding COVID-19.

For all posts and comments collected in the two refined datasets, thematic content analysis method was used for qualitative analysis, key terms and concepts are the approach of thematic content analysis (Smith et al., 1992). The two datasets were separately examined, from which 9 themes were teased out through a two-stage process of data reduction: 1) pulling out the keywords or main phrases from each post and comment that summarised the main idea, and 2) finding out repeated words or the "common features" to make clusters and extract themes. 5 themes came from the post dataset and 4 themes came from the comment dataset. Posts within each theme were counted, and frequencies of each theme were obtained by enumerating the proportion of post numbers within a single theme to the total, and the similar statistics were done on the comment dataset. Moreover, statistics on posts and themes in each of the three phases of COVID-19 covered in this study were also done.

III. Results

In total, 29 posts and 71 user comments were analysed by thematic content analysis method and 9 themes were extracted from the two datasets. The following five themes came from the post dataset: Business Guide, General Guide and Help, Business Planning and Life Preparedness, Policy and Social Information; and the other 4 themes, Essential Services, Workplace Issues, Essential Personal Movement and Daily Life Questions, were gained from the comment dataset.

Posts on MBIE Facebook

For the 29 collected posts, statistics about the number of posts that fall within each theme and relevant frequencies were shown below in Figure 1. Among the five themes, posts focusing on "business guide" come top, occupying nearly half of the total, followed by the "general guide and help" and "social issues". The remaining two themes both account for a small percentage. So, offering guidance for businesses during COVID-19 was the priority of MBIE on Facebook, and a general guide and help for the public was the key work. In addition to policies and business planning, several social issues related to daily life were also included.

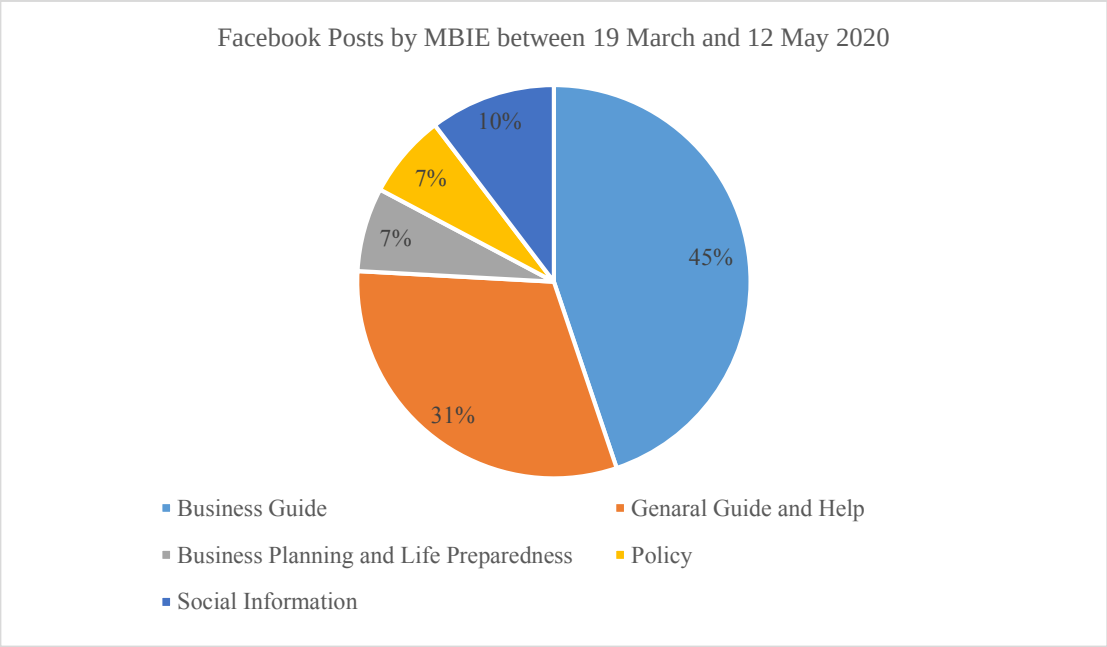

Figure 1. Posts classified by themes

Since the set time frame in this research covered three different phases, before lockdown, during lockdown and Level 3 after lockdown, statistics about the number of posts and relevant themes included in different phases were shown in Figure 2. The majority of posts, covering a wide range of themes, were published within the week before lockdown and five weeks of lockdown. During the two weeks of Level 3 after lockdown, there were only 3 posts on MBIE Facebook. And in these different phases, MBIE focused on different topics.

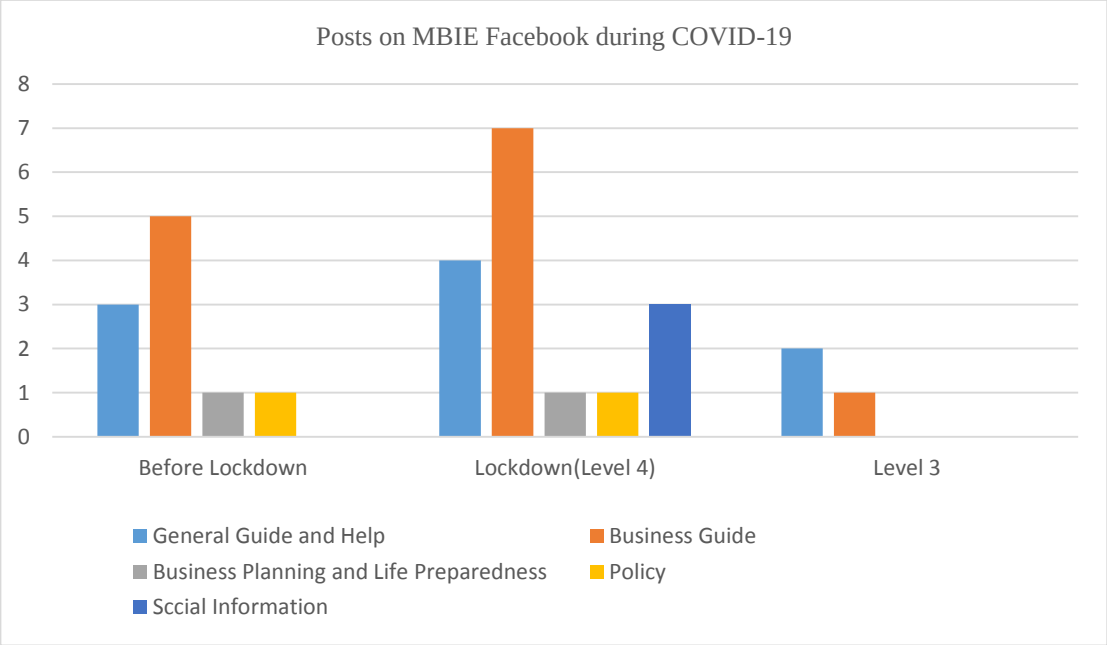

Figure 2. Posts in different phases of COVID-19

Business Guide

A variety of business issues accounted for a top proportion (45%). Organisations in all sectors can find a general guide for COVID-19, government financial support for businesses, information on the wage subsidy, and workplace restrictions for businesses and workers at different alert levels. Some very detailed safety suggestions and tips for businesses were also found (eg, "activate security surveillance equipment and alarms") and there was guidance information for specific businesses such as the building and construction sector, providing restrictions to this industry. In addition, MBIE also posted information about "essential businesses", where people can find information on classification and constraints of essential services, and there was guidance for a business to check whether or not it was essential. Moreover, a web link was provided by MBIE for people to report a business if they thought it did not close as required.

General Guidance and Help

Clear directions for the public to seek all kinds of help or support during COVID-19 or giving certain reminders or suggestions regarding people's well-being and self-protection were provided by MBIE. 31% of the posts fell into this theme and received as many as 259 likes and shares from users.

The public could find the direction to look for authentic COVID-19 updates, the frequently asked questions regarding COVID-19, and information about differences between alert levels (eg, "The Unite against Covid-19 team will be answering your frequently asked questions today - follow them for more info."). Besides the practical help information for local people, there was also support information for visitors travelling in New Zealand who could not get home during this very special period (eg, "If you're a visitor currently here in New Zealand, please read this."). MBIE offered the call number and hyperlink for visitors who needed self-isolation temporary accommodation, which got the highest number of likes and shares from users among all the collected posts.

In addition, MBIE paid attention to people's mental well-being and health. There were some inspiring video posts to encourage people to unite against the virus. MBIE gave specific suggestions to people if they felt concerns in this situation, encouraging them talk to family or friends, and offered several helplines for people to search for help at any time if they suffered from mental stress. People need to be vaccinated for COVID-19 and social media can be an effective tool to convince public (Ruiz & Bell, 2021). Furthermore, MBIE was also concerned with customer rights. It provided suggestions and support web links for people if they had concerns on price increases for essential goods during COVID-19.

Business Planning and Life Preparedness

MBIE also addressed regulatory actions, to inform the businesses and public what kinds of action the country would take next and what specific demands it would have on them. Two messages (7%) said New Zealand was going to step into Alert Level 4 and move to Alert Level 3 respectively, both with official requirements for everyone. They explained what businesses must be closed and which could be open, and what safety measures must be adopted to minimise the virus transmission threat for those essential businesses. For the public, people would know where they could go and where they could not, and they could make all kinds of preparations in

advance regarding the closing time of schools and educational facilities, the opening times of supermarkets and clinics, and other business restrictions.

Policy

Policies about COVID-19 alert levels in New Zealand were found (7%), which must be enforced across the nation. Most people had little knowledge about different alert levels of such an unusual pandemic. Two posts addressing government polices covered comprehensive knowledge on different COVID-19 levels for businesses and people, including regulations for businesses, public safety obligations, social measures and so on.

Social Information

There was also social information related to people's daily life (10%), asking people not to flush anything other than toilet paper down the toilet folks and addressing two festival days (eg, "Happy Easter."). So MBIE not only posted COVID-19 information, but also several social issues in daily life, encouraging the public to care about these important events as usual.

User comments

A statistical result of comments classified by themes is shown in Figure 3. Of the 4 themes, "essential services" were asked about most frequently by users, followed by "workplace issues" and "social issues", and "essential personal movement" was the least.

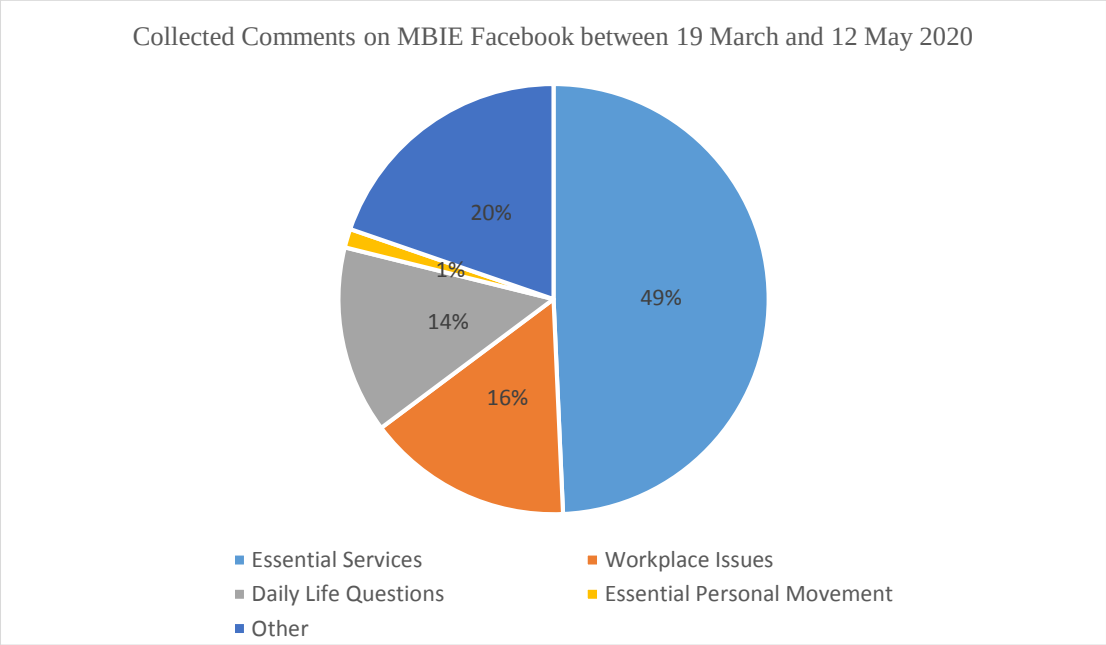

Figure 3. Comments classified by themes

Essential Services

The most common queries were about essential services (49%), coming from both people and businesses, encompassing inquiries about the scope of essential businesses, worries concerning some businesses out of the essential list still running, and enquiries from small businesses about specific provisions. People were concerned about what kinds of businesses are classified as essential and how this will affect their life, and whether those non-essential enterprises close according to the regulations, hoping that they will not increase the threat to people's health and safety (eg, "Why are all the bottle shops in Hamilton starting online deliveries? Hardly essential."). And some people asked if they could use some specific services needed in life during lockdown, such as wood delivery for heating. Also, private businesses addressed questions, mainly concerning how to register as an essential service or what they could do under the lockdown to mitigate the consequences on their businesses. Organizations focus on corporate interests and reputation management in response to a pandemic (Kim and Liu, 2012). It's worth mentioning that nearly all of these users' inquiries gained timely responses from MBIE.

Workplace Issues

Several workplace issues were enquired in the comments (16%), and an overwhelming 82% of these comments focused on the subsidy, which was directly and closely related to people's immediate interest. Some people had no knowledge about whether they were qualified to apply for subsidy, and some questioned their company's compliance with the regulations to pay them the subsidy (eg, "Can an employer only pay their employees 80% of wage or wage subsidy amount once their operations resume once lockdown is over?"). In addition, "employee rights" was also an issue that people cared about a lot; there were two users who both enquired if it was right that the employers let workers take annual leave during lockdown (eg, "Is it right for companies to make staff to take annual leave?").

Daily Life Questions

Questions in people's daily life were also asked (14%). People were concerned with the school safety, the temporary accommodation, the winter heat in the house, issues regarding the working visa and the product price increasing (eg, "I think we need to stop all schools now before it's too late." "Will there be any place to access clothing?"). Most of these inquiries have been answered by MBIE with helpful guidance.

Essential Personal Movement

An essential worker asked questions related to personal safety during work (1%). It got a quick response from MBIE with a document hyperlink which explained information about essential personal movement.

IV. Discussions

To our knowledge, this study is the first to explore how a government organization used social media to address COVID-19 in New Zealand. Analysis of the posts and comments provided abundant information and knowledge for the research problem. Findings of the study indicated that MBIE used Facebook as a comprehensive channel

to address multiple information as well as an avenue to interact with businesses and people during COVID-19. Up-to-date news, announcements and information were transferred real-time to businesses and users by MBIE on Facebook, and MBIE used Facebook to communicate with them actively and effectively. Tomer, Avishay and Bruria (2015) stated that social media is being utilised by government organisations as an integral tool to manage emergencies. In their study, Latonero and Shklovski (2010) also stated that in an emergency like a fatal pandemic, social media plays an important role in two ways; first, it is used by emergency agencies in response to the event and, second, it is a platform where the public shares information and questions. MBIE used Facebook to address COVID-19 in these two ways as well.

In the meanwhile, a variety of issues regarding COVID-19 were discussed between MBIE and users, including businesses and people. "Essential services" was the one getting the most attention, but businesses and people focused on different things according to their benefits. Those businesses not in the essential list were concerned about how they could be allowed to open during lockdown, to minimise the consequences from COVID-19. The people, however, mainly cared about which essential businesses could still open and worried whether all the services that were in business could obey the safety obligations as required. "Wage subsidy" was also a hot topic enquired about by many people. People were concerned about whether they could meet the requirements for applying for the wage subsidy, and some questioned if their organisations misused the wage subsidy. And people cared about their personal rights during this particular time, such as their annual leave. In addition, some daily life issues regarding COVID-19 were discussed by people, such as school closure, which affected people's life to a great extent.

Moreover, businesses of all sectors benefitted from social media to improve business planning and response towards COVID-19. Workplace restrictions under different alert levels could also be gained clearly from MBIE Facebook, thus businesses could make corresponding operation planning and preparedness effectively. Based on the government regulatory actions and policies published on MBIE Facebook, businesses knew what steps in strategy they could take in the near future in accordance with government decisions. such as government financial support, subsidy policies, leave and self-isolation support. In addition, essential businesses could also find effective guide information for making strategies, both for operations and safety. Furthermore, comprehensive information about essential services was posted by MBIE on Facebook, which stressed effects on supply chains of other businesses like supermarkets, so these businesses could adopt coping polices to deal with these consequences.

Some implications were derived from the findings through a deeper interpretation, providing valuable insights to the field of research and complements to the previous studies.

Keeping people well-informed is critical in a pandemic

The findings in the study revealed that people were consulting on all types of issues, including essential services, workplace issues, and social problems like school closure. Palen and Liu (2007) stated that human beings depend mostly on social networks and information. In a crisis or emergency, people need of all kinds of information, to learn about the current situation and mitigate uncertainty about the event (Boyle et al., 2004; Stiegler et al., 2011). People care about what is going to happen and how things will affect their life during a pandemic; they are concerned about the situation, their own interests and their daily life. In an event where people's health is at risk, it is critical to identify the risk (Maxwell, 2003) and messages should be communicated to those who are affected,

to reduce their panic (Wray et al., 2008). In the same way, the implication in this study is that it is critical to keep public well-informed during pandemics.

Social media used strategically to address information by governments in different phases of a pandemic

Before the national lockdown, MBIE posted two to three posts per day, providing guidance to access to COVID-19 updates, business support, and regulatory actions. As Vijaykumar, Santosh and Jin (2015) suggested in their proposed RAMS (The Risk Amplification through Media Spread) model, that in the initial stage of an infectious disease outbreak, government institutions foster information-sharing networks and build awareness among public on social media. Loss of information may increase uncertainly between people, causing collective stress (Tomer et al., 2015). MBIE made available information on likely threats and corresponding actions on Facebook, which is a basic human need in such a condition (Barton, 2005), in order to cultivate awareness and trust from the public.

The RAMS model stated that in the stage of increasing number of cases, information about FAQs, more guidance, tailored information for specific groups should be made. During lockdown, up-to-date information was posted, including general guide, business guide, policies, FAQs, and social issues. In addition, "tailored information" was also provided, such as business guide information for the construction sector. It was suggested that in a pandemic outbreak, the focus of dissemination on social media in on communicating preparedness information (Kim & Liu, 2012; Tirkkonen & Luoma-aho, 2011). However, in addition to the preparedness information, MBIE provided a wide range of information regarding COVID-19 such as business guide in response to COVID-19. Moreover, social messages like celebration for Easter Day were also posted to mitigate the disruptions on social relationships by COVID-19 (Tyler, 2020). All of these would provide a great deal of help to both businesses and people get through this tough period more easily.

During the two weeks of Level 3 when the situation was gradually easing, there was no intensive information published and only 3 messages about protecting consumer rights and suggestions regarding workplace safety were posted. As pointed out by the RAMS model, in the phase of significant decrease in number of cases, updates can be provided on a less frequent basis and information that helps people can be offered. At a "recovery" stage of a social crisis, bolstering strategies are adopted to express solidarity and deal with emergency distress (Liu et al., 2018). During the Level 3 period, MBIE posted messages focusing on people's concern about price increase and emphasizing businesses continue with the efforts for reducing the COVID-19 risk at work.

Information sharing between multiple emergency authorities

In this study MBIE actively engaged and shared a lot of information from other official Facebook accounts, such as New Zealand government, Water New Zealand, Fire and Emergency New Zealand. All kinds of specific information from different departments was communicated on MBIE Facebook page to help the public respond to COVID-19. As Yates and Paquette (2011) pointed out, emergency authorities are often structured hierarchically and operate based on particular expertise and responsibilities, social media enables coordinating knowledge and actions between multiple response agencies. Similar findings were addressed by Liu, Lai and Xu (2018), which presented government organizations engaged Twitter accounts of other institutions in their emergency responses.

A tripartite benefit model

MBIE, businesses from all sectors and people are equally beneficial from social media during COVID-19. As observed in the study, nation-wide policies, regulations and measures that are enforced, business guide and life support were published by MBIE on social media real-time to the public during COVID-19. All businesses and people can access up-to-date knowledge and information regarding COVID-19 anytime and anywhere. And among the user comments, several came from private business owners. Social media serves as an alternative communication channel for government and business organizations (Bygstad & Presthus, 2013; Diers & Donohue, 2013; Tirkkonen & Luoma-aho, 2011), and the simplified processes to access resources by governments help the public in response to an emergency (Quarantelli, 2006).

As social media provides a platform for interactive, participatory and two-way communication (Latonero & Shklovski, 2010; Palen & Liu, 2007), involving public engagement, the MBIE could also benefit from it. Opinions from businesses and people can be collected by MBIE to gain knowledge about their concerns and requirements, for more effective decision-making in mitigating risks.

V. Implications of the study for Practice

Taking into consideration the findings, this study came up with two recommendations for practice, focusing on enhancing businesses' resilience towards a future pandemic. This study recommends that:

First, businesses use multiple social media to communicate a pandemic with employees. According to Margaret (2020) and Mathew (2019), in addition to websites and applications, "Forums, microblogging, social networking, social bookmarking, social curation and wikis" are also regarded as different types of social media. Businesses can make use of different social media available to inform their employees during a pandemic, such as Facebook, emails, internal forums, so that employees can be informed in multiple ways about essential information. Moreover, businesses are able to understand what employees are most concerned about through this two-way communication so they can make appropriate strategies to help and protect employees.

Second, updates should be made to current business continuity planning. Business continuity plans should be based on expert assumptions from leading public health organizations, impacts and consequences from government control strategies, and corresponding measures made to mitigate the effects (Danforth et al., 2010). COVID-19 is a special virus that affected so many countries across so many sectors, the experiences and lessons learned from this disease outbreak are valuable for future pandemic planning. The findings and implications of the research that provides business planning and business guides can be formulated to update business continuity planning for future pandemics and other types of emergencies.

VI. Limitations

There are certain limitations that need to be acknowledged and can be further addressed in future research. The first limitation is that the current research chosen a single government organization MBIE as the entity in the case study, which is the leading business-facing agency in New Zealand, thus the findings from the study are mainly relevant and beneficial to businesses of all sectors. It is suggested future research be done based on other governmental institutions, to examine how they used social media to communicate COVID-19 and what are the outcomes.

The second limitation is the study was conducted in a single country, New Zealand, which is a developed country with internet. Therefore, the findings of this study may not be generalised to the countries where internet is not developed. Similar studies could be done in these countries or regions to examine how social media was used for communicating COVID-19.

Another limitation is that the study chose one platform Facebook for research; in future similar research problem could be conducted based on other social media platforms such as Twitter and Instagram. These platforms are different from each other in their features, for example, Facebook can involve various media types and long messages, people can have back-and-forth conversations on it. On the other hand, Twitter allows only short messages and Instagram is mainly based on images rather than texts. As a result, these different platforms can be used for different purposes and through different strategies in a disease outbreak. Future research can focus on these platforms and compare between them in the COVID-19 communication.

VII. Conclusions

This mixed methods study sought to explore how MBIE used Facebook for addressing COVID-19 and to understand what businesses can use social media to prepare for and respond to a pandemic in future. During COVID-19, MBIE addressed general guide and help, business guide, business planning and life preparedness, and government polices to businesses and people. MBIE also interacted with businesses and users on Facebook; essential businesses, workplace issues, essential worker safety and daily life issues were discussed between them. Governmental agencies can utilise social media to communicate a pandemic to the public effectively. Both businesses and people can benefit from social media for a pandemic preparedness and response.

The implications derived from the study provide practical guide for both governments and businesses in a virus outbreak. People care about multiple work and life issues during a pandemic, such as essential businesses, workplace policies and social issues, so keeping people real-time informed is the high priority for government authorities and businesses. And governments and businesses should use social media to address an epidemic differently in different phases according to the needs of the public, both in frequency and content, to effectively disseminate information and reduce public panic. Moreover, different emergency agencies can take advantage social media to share pandemic information to generate more comprehensive knowledge to people. Social media benefit the government, businesses and the public during a pandemic, through easy-to-access interactions among the three entities in issues like nation-wide policies and measures, business guide, business continuity planning, life support and public concerns.

References

Babbie, E. R. (2010). *The practice of social research* (12th ed.). Belmont, CA: Wadsworth Cengage.

Barton, A. H. (2005). Disaster and collective stress. *What is a disaster*, 125-152.

Ben, L. (2020). *COVID 19 coronavirus crisis: Thousands of job cuts coming, warns industry boss.* NZherald. https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=12318414

Boyle, M. P., Schmierbach, M., Armstrong, C. L., Mcleod, D. M., Shah, D. V., & Pan, Z. (2004). Information seeking and emotional reactions to the September 11 terrorist attacks. *Journalism & Mass Communication Quarterly*, *81*(1), 155-167. https://doi.org/10.1177.107769900408100111

Brenda, K. W. (2020). Using social media to our advantage: alleviating anxiety during a pandemic. *Cyberpsychology, Behavior, and Social Networking, 23*(4). https://doi:10.1089/cyber.2020.29180.bkw

Bygstad, B., & Presthus, W. (2013). Social media as CRM? How two airline companies used Facebook during the 'Ash Crisis' in 2010. *Scandinavian Journal of Information Systems, 25*(1), 51-72.

Celile, W., Jack, R., & Stephane, J. (2013). *The use of social media in risk and crisis communication.* (OECD Working Papers on Public Governance No. 24). https://read.oecd-ilibrary.org/governance/the-use-of-social-media-in-risk-and-crisis-communication_5k3v01fskp9s-en#page1

Chan, A. K. M., Nickson, C. P., Rudolph, J. W., Lee, A., & Joynt, G. M. (2020). Social media for rapid knowledge dissemination: early experience from the COVID-19 pandemic. *Anaesthesia.* https://doi:10.1111/anae.15057

Christopher, H. (2019). *Most active social media networks New Zealand 2018*. Statista. https://www.statista.com/statistics/681840/new-zealand-most-popular-social-media-networks/

Creswell. J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Thousand Oak, CA: Sage.

Danforth, E., Doying, A., Merceron, G., & Kennedy, L. (2010). Applying social science and public health methods to community-based pandemic planning. *Journal of business continuity & emergency planning, 4*(4), 375-390.

Diers, A. R., & Donohue, J. (2013). Synchronizing crisis responses after a Transgression: An analysis of BP's enacted crisis response to the Deepwater Horizon Crisis in 2010. *Journal of Communication Management, 17*(3), 252-269.

Feng, S., & Hossain, L. (2016). Risk-informed decisions for epidemics. *Journal of Decision System, suppl, Supplement 1, 25,* 240-247. https://doi:10.1080/12460125.2016.1187813

Han, X., Wang, J., Zhang, M., & Wang, X. (2020). Using social media to mine and analyze public opinion related to COVID-19 in China. *International Journal of Environmental Research and Public Health. 17*(8). https://doi:10.3390/ijerph1782788

Holly, S., Aylin, W., & Dave, M. (2020). A comprehensive timeline of the new coronavirus pandemic, from China's first case to the present. Business Insider. https://www.businessinsider.com.au/coronavirus-pandemic-timeline-history-major-events-2020-3?r=US&IR=T

Jason, W. (2020). *Covid 19 coronavirus: Some businesses 'mortally' wounded by pandemic, lockdown MPs told.* NZherald. https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12223376

Kim, S., & Liu, B. (2012). Are all crises opportunities? A comparison of how corporate and government organizations responded to the 2009 flu pandemic. *Journal of Public Relations Research, 24*(1), 69-85. https://doi:10.1080/1062726X.2012.626136

KPMG. *Embedding resilience. A guide to the business implications of COVID-19.* KPMG. https://home.kpmg/xx/en/home/insights/2020/03/the-business-implications-of-coronavirus.html

Latonero, M., & Shklovski, I. (2010). Respectfully yours in safety and service: Emergency management & social media evangelism. *Proceedings of the 7th international ISCRAM conference, Seattle, USA.*

Liu, W., Lai, C. H., & Xu, W. (2018). Tweeting about emergency: A semantic network analysis of government organizations' social media messaging during Hurricane Harvey. *Public Relations Review, 69.* https://doi.org/10.1016/j.pubrev.2018.10.1009

Lorene, M. N., Julia, F. S., & Abiodun, O. (2020). US public concerns about the COVID-19 pandemic from results of a survey given via social media. *JAMA Internal Medicine.* Published online April 07, 2020. https://doi:10.1001/jamainternmed.2020.1369

Lwin, M. O., Lu, J., Sheldenkar, A., & Schulz, P. J. (2018). Strategic uses of Facebook in Zika outbreak communication: Implications for the crisis and emergency risk communication model. *International Journal of Environmental Research and Public Health, 15*(9). https://doi:10.3390/ijerph15091974

Matthew, H. (2019). *What is social media?* The Balance Small Business. https://www.thebalancesmb.com/what-is-social-media-2890301

Margaret, R. (2020). *Social media*. Whatls. https://whatis.techtarget.com/definition/social-media

Mary, M. C., Julie, B., & John, E. (2020). *Coronavirus sweeps through Detroit, a city that has been crisis before.* New York Time. https://www.nytimes.com/2020/03/30/us/coronavirus-detroit.html

Maxwell, T. A. (2003). The public need to know: emergencies, government organizations, and public information policies. *Government Information Quarterly, 20*(3), 233-258. https://doi.org/10.1016/S0740-624X(03)00039-X

Palen, L., & Liu, S. B. (2007). Citizen communications in crisis: Anticipating a future of ICT-supported public participation. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 727-736). San Jose, CA.

Pulido, C. M., Ruiz-Eugenio, L., Redondo-Sama, G., & Villarejo-Carballido, B. (2020). A new application of social impact in social media for overcoming fake news in health. *International Journal of Environmental Research and Public Health, 17*(7). http://doi:10.3390/ijerph17072430

Quarantelli, E. (2006). Catastrophes are different from disasters: Some implications for crisis. *Social Science Research Council, New York.*

Ritterman, J., Osborene, M., & Klein, E. (2009). Using prediction markets and Twitter to predict a swine flu pandemic. In: *1st International Workshop on Mining Social Media.*; 2009.

Robertson, C., & Yee, L. (2016). Avian influenza risk surveillance in North America with online media. *PLoS One, 11*(11). https://doi:10.1371/journal.pone.0165688

Roy, M., Moreau, N., Rousseau, C., Mercier, A., & Wilson, A. (2020). Ebola and localized blame on social media: analysis of Twitter and Facebook conversations during the 2014-2015 Ebola epidemic. *Culture, Medicine and Psychiatry. 44*(1). http://doi:10.1007/s11013019-09635-8

Ruiz, J. B., & Bell, R. A. (2021). Predictors of intention to vaccinate against COVID-19: Results of a nationwide survey. *Vaccine, 39*(7), 1080-1086. http://doi.org/10.1016/j.vaccine.2021.01.010

Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research methods for business students* (7th ed.). Pearson Education Limited.

Shahi, G. K., Dirkson, A., & Majchrzak, T. A. (2021). An exploratory study of covid-19 misinformation on twitter. *Online Social Networks and Media, 22,* 100104. http://doi.org/10.1016/j.osnem.2020.100104

Shahmir, H. A., Joshua, F., Ariadna, C., Abbey, M. J., Yesim, T., & Ralph, J. D. (2020). Social Media as a Recruitment Platform for a Nationwide Online Survey of COVID-19 Knowledge, Beliefs, and Practices in the United States: Methodology and Feasibility Analysis. *BMC Med Res Methodol, 20*(1), 116.

https://doi:10.1186/s12874-020-01011-0

Sharma, M., Yadav, K., Yadav, N., & Ferdinand, K. C. (2017). Zika virus pandemic-analysis of Facebook as a social media health information platform. *Am J Infect Control. 45*(3), 301-302. https://doi:10.1016/j.ajic.2016.08.022

Smith, C. P., Atkinson, J. W., McClelland, D. C., & Veroff, J. (1992). *Motivation and personality: handbook of thematic content analysis.* Cambridge University Press.

Stiegler, R., Tilley, S., & Parveen, T. (2011, September). Finding family and friends in the aftermath of a disaster using federated queries on social networks and websites. In *2011 13th IEEE International Symposium on Web Systems Evolution (WSE)* (pp. 21-26). IEEE.

Susan, S. (2020). *COVID-19 pandemic timeline.* Radio New Zealand [RNZ]. https://shorthand.radionz.co.nz/coronavirus-timeline/#section-YV3fin7lvU

Szomszor, M., Kostkova, P., & Louis, C. S. (2011). Twitter informatics: Tracking and understanding public reaction during the 2009 Swine Flu pandemic. In: *2011 IEEE/WIC/ACM International Conferences on Web Intelligence and Intelligent Agent Technology.* Lyon; 2011:320-323. https://doi.10.1109/WI-IAT.2011.311

Tirkkonen, P., & Luoma-aho, V. (2011). Online authority communication during an epidemic: A Finnish example. *Public Relations Review, 37*(2), 172-174. https://doi.org/10.1016/j.pubrev.2011.01.004

Tomer, S., Avishay, G., & Bruria, A. (2015). Socializing in emergencies – A review of the use of social media in emergency situations. *International Journal of Information Management, 35*(5), 609-619. https://doi.org/10.1016/j.ijinfomgt.2015.07.001

Tyler, W. (2020). Researchers study COVID's effect on relationships. *University of Georgia.* https://news.uga.edu/research-covid19-effect-on-relationships/

Vasileios, L. & Nello, C. (2010). Tracking the flu pandemic by monitoring the Social Web. In: *2nd International Workshop on Project: Disease modelling from online user-generated data.*; 2010. https://doi:10.1109/CIP.2010.5604088

Vibha, P., Bijayini, J., & Sanjay, K. (2013). Qualitative Research. *Perspectives in clinical research, 4*(3), 192. https://doi.org/10.4103/2229-3485.115389

Viet-Phuong, L., Thanh-Hang, P., Ho, M. T., Minh-Hoang, N., & Nguyen, K. L. P. (2020). Policy response, social media and science journalism for the sustainability of the Public Health System amid the COVID-19 outbreak: The Vietnam lessons. *Sustainability, 12*(7). http://doi:10.3390/su12072931

Vijaykumar, S., Jin, Y., & Nowak, G. (2015). Social media and the virality of risk: The risk amplification through media spread (RAMS) model. *Journal of Homeland Security and Emergency Management, 12*(3), 653-677. https://doi:10.1515/jhsem-2014-0072

Vinay, K. J., & Shishir, K. (2015). An effective approach to track levels of Influenza-A (H1N1) pandemic in India using Twitter. *Procedia Computer Science, 70*, 801-807. https://doi.org/10.1016/j.procs.2015.10.120

Wray, R. J., Becker, S. M., Henderson, N., Glik, D., Jupka, K., Middleton, S., … & Mitchell, E. W. (2008). Communicating with the public about emerging health threats: lessons from the pre-event message development project. *American Journal of Public Health, 98*(2), 2214-2222.

Yates, D., & Paquette, S. (2011). Emergency knowledge management and social media technologies: A case study of the 2010 Haitian earthquake. *International journal of information management. 31*(1), 6-13. https://doi.org/10.1016/j.ijinfomgt.2010.10.001.