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Effects of the Coronavirus (COVID-19) Pandemic on Social Behaviours: From a Social Dilemma Perspective

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Abstract. The health crisis of the COVID-19 outbreak has global impacts on humanity and the economy. Such pandemic effects also influence human behaviour; issues of panic buying (overbuying) and noncompliance with government orders and law among individuals are evident. However, the underlying understanding of such behaviours due to the pandemic remains unclear. Therefore, this perspective paper adopts the social dilemma theory and microeconomics concepts to analyse and explain the effects of COVID-19 on social behavioural reactions. It attempts to address the questions of what and why are the behaviours of individuals shown during the coronavirus pandemic and showcase how the theory is associated with the current social phenomena. Real scenarios based on media reporting from the sociodemographic context of Malaysia, concerning the following issues; (i) competition over daily essentials; (ii) self-honesty of individuals; and (iii) adherence to government policies and measures enforcement (governance) were discussed. A conceptual framework was developed to illustrate interrelationships between social dilemma concepts and the phenomena. In essence, due to fear, uncertainty, and greed, self-interest and opportunistic (defective/unethical) behaviours of most individuals prevailing over societal collective interest amid the pandemic have been prevalently observed in the above instances, although a cooperative choice can eventually result in a better outcome for everyone. Not only do these non-cooperative behaviours of individuals create inconveniences, dissatisfactions, and other forms of negative externalities, they also incentivise others to act selfishly, if no restrictions are imposed, which may eventually cause government intervention failures. This paper demonstrates the relevancy of the social dilemmas theory in better understanding fundamental human behavioural reactions amid the health crisis and the importance of incorporating the findings into government policymaking. These sociopsychological considerations help the government formulate holistic measures, namely stringent sanctions and monitoring enforcement, as well as incentivising cooperative and compliant behaviours of the public, which then contribute to curbing the COVID-19 pandemic more effectively.

Keywords. Effects of COVID-19, Malaysia, Pandemic, Self-Interest and Opportunism, Social Behaviours, Social Dilemma.

1. Introduction

The global health crisis of the COVID-19 pandemic has unprecedented social and economic impacts [1]. Positive confirmed cases and death toll are increasing daily, spanning over 200 countries, where both numbers, as of 20 April 2020, have surpassed 2 million and 100,000

cases, respectively [2]. The global economy has hit a recession, leading to a financial crisis. In efforts to curb the pandemic, numerous scientific clinical trials and medical research have been undertaken, aiming to develop vaccines to treat the disease, as well as government interventions (e.g., social distancing policies, self-isolation/quarantines, movement control orders, travel restrictions, and lockdowns) and reliefs (financial incentives and supports) are in place to 'flatten the curve' and ameliorate the economic situation. Meanwhile, the pandemic is also believed to have impacts on the behaviours of individuals, where issues of panic buying (overbuying), hoarding, and noncompliance with government orders among individuals are evident. Implicationally, these have led, and can lead, to severe social issues and other negative externalities (e.g., more COVID-19 infected cases). However, the underlying understanding of, and research on, such human behavioural reactions as a result of the pandemic are lacking.

As such, rested on microeconomics and psychology disciplines, this perspective paper attempts to employ social dilemma theories and concepts to analyse and explain the effects of COVID-19 on social attitudes and behaviours. Based on the brief literature review, the above symptomatic behavioural reactions of individuals can be associated with the aforesaid social dilemmas theories and concepts, focusing on conscious or unconscious self-interest and opportunistic behaviours [3][4]. These sociopsychological considerations are important to address the questions of what and why are the behaviours of individuals shown during the coronavirus crisis and the measures imposed and showcase how the social dilemma theories above are associated with the current social phenomena (behaviours).

Therefore, to test the above theory's significance and validity, the study area is set within the sociodemographic context of Malaysia, in which background pertaining to COVID-19 situations and government measures taken are to be first described. Malaysia had the highest tally of COVID-19 infections in Southeast Asia [5]; with an average increase of over 100 cases daily, since early March 2020, Malaysia's COVID-19 cases crossed the 5000-mark [6]. Reported cases remained relatively low and mainly confined to imported cases, until a few local clusters linking to a Tablighi Jamaat religious congregation held in Kuala Lumpur (a national capital) emerged in March, which ensues in a significant increase in local cases [7], i.e., about 1700 cases have been traced as of 10 April 2020, contributing to about 40% of the total COVID-19 cases. As of 9 April 2020, there were 4,338 confirmed cases in the country, with 67 deaths reported. The total positive confirmed cases contribute less than 1% from an estimated population of 32 million (over 90% are citizens and about 10% are non-citizens) [8] and the fatality rate was 1.56%, which is relatively lower than the Philippines and Indonesia but is more severe than Brunei, Singapore, and Thailand.

Although the numbers may appear insignificant, the viral transmission can be rapid and hence the number of cases and the death toll may increase significantly, as shown by some European countries, e.g., Italy, France, and the United States, if effective measures are not in place nor are they strictly observed by the public. In response to containing the widespread of the coronavirus, the Malaysian government announced the Movement Control Order (MCO) (a form of partial lockdown) from 18 March to 31 March and urged the public to exercise social distancing. The government then extended the Enhanced Movement Control Order (EMCO) twice from 1 April to 14 April 2020, and it continued from 15 April to 28 April 2020, in an attempt to curtail the further rise in cases, since the World Health Organisation (WHO) had a projection that the number of cases in Malaysia is expected to peak in mid-April [9]. During the lockdown period where activities involving mass gathering are closed down, only the essential services are allowed to operate, according to the Federal Gazette - Prevention and Control of Infectious Diseases (Measures within Infected Local Areas) (No.2) Regulations 2020, involving food, water, energy, telecommunications, healthcare, security, and others [10].

The remainder of the viewpoint is structured as follows: First, discussion, which begins with analysing real social phenomena based on national and international media reporting using the social dilemmas theory [3][4], mainly involving the concepts of self-interest, self-rationality, collective interest, opportunism, negative externalities, overexploitation, the game theory and the tragedy of the commons [11]. Next, a conceptual framework was formulated to show the interrelationships between the concepts and the phenomena. Lastly, a conclusion comprising the summary of findings, recommendations, and policy implications and significance.

2. Discussion

Social dilemma theory has been widely used in order to understand sociopsychological thoughts and behaviours of individuals (i.e., how does one behave?), given an interdependent decision-making situation in which the individuals' personal interest is in conflict with collective interest [12] [13]. Under this condition (i.e., inner conflict), the theory argues the dominant strategy will be that individuals tend to maximise self-interest by behaving selfishly (rationally) and/or opportunistically (making a defecting/unethical choice) [14], rather than making a cooperative choice, which is a less preferred strategy, to prioritise the advantage of the collective/public interest, as the former always receives a higher return, at least in the short run. However, if all individuals involved make a defecting decision (act selfishly and rationally), all will suffer eventually. By definition, self-interest (selfishness), whether it is defective or enlightened one in which the former is emphasised in this paper, refers to individuals necessarily behaving rationally to maximise their advantages (welfare and utility), regardless of others, whether intentionally (e.g., greed) [15] or unintentionally (e.g., due to worries, fear, and anxiety) [14].

While, opportunism, building on self-rationality/selfishness, is that people may look after their interests while trying to break the rules/promises or norms of behaviour. Specifically, Williamson defines opportunism as the *“lack of candor or honesty in transactions, to include self-interest seeking with guile”* [16]. He further referred opportunism to as *“the incomplete or distorted revelation of information, especially ‘guile’ to calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse”* [17]. In short, guile here involves dishonesty, deception, cheating, and lying, which are associated with unethical behaviours [14]. Consequently, both defective self-interest and opportunistic behaviours result in negative externalities or social costs. Negative externality means a decision/activity made by an individual inflicting costs on, and causing harmful effects to, a third party (i.e., collective interest), e.g., creating inconveniences and dissatisfaction among individuals [18]. These social costs are often intangible and non-quantifiable. Therefore, as posited by Kollock [4] *“individually reasonable behaviour leads to a situation in which everyone is worse off than they might have been otherwise”*.

The above theory can be clearly illustrated using a game-theoretic model/prisoner's dilemma analogy [19]. The model is useful to analyse why individuals might not cooperate, even it appears that it is in their best interests to do so for better long-term outcomes. In this game, greed and fear offer two distinct incentives to defect. Based on this prisoner's dilemma (see Table 1 below), with two prisoners detained separately, there are four possibilities as follows:

Table 1: Prisoner's Dilemma [19]

- (a) If A and B each betray the other simultaneously (everyone is being selfish/rational), each of them serves two years in prison (see scenario IV);
- (b) If A selfishly betrays B but B remains silent (being cooperative), A will be set free, and B will serve three years in prison (and vice versa).

versa) (see scenarios II and III); and (c) If A and B both remain silent (being cooperative), both of them will only serve one year in prison (see scenario I).

Despite the possible options (i.e., no matter what the other decides), under the social-

	Prisoner B stays silent (cooperates)	Prisoner B betrays (defects)
Prisoner A stays silent (cooperates)	Each serves one year (I)	Prisoner A: three years Prisoner B: goes free (II)
Prisoner A betrays (defects)	Prisoner A: goes free Prisoner B: three years (III)	Each serves two years (IV)

dilemma (temptation of high payoff (incentives) circumstances, the probable outcome of this game is that the prisoner (either A or B) tends to behave self-interestedly/opportunistically by betraying his partner in order for him to be safely released, although cooperation can yield a better result (i.e., 1-year imprisonment each). Due to fear, and communication is not possible (with high transaction costs), each prisoner fears that, if their cooperativeness is not reciprocated by the other one; hence, it is more reasonable for them to betray. In addition to that, because of greed, none of the prisoners is willing to be jailed (i.e., receives punishment even the slightest one); both of them want to be freed; therefore, the former defective behaviour is further substantiated. Little did they realise, if both (e.g., everyone or the entire public) choose to be rational/selfish or greedy continuously and concurrently, all will suffer eventually (see scenario IV- also known as collective irrationality), and the consequences as a result of the defective behaviours will be worsened. One key takeaway of this game is that, although rationality is required as a crucial component in most decision making for optimal outcomes, short-sighted self-rationality leading to collective irrationality infers otherwise, i.e., the outcome either for the prisoners, for bystanders, or both, may not be desirable.

Contextualising the theory into the current situation of the COVID-19 pandemic to analyse and explain Malaysia's public behavioural reactions amid the crisis, it is revealed that the pandemic indeed leads to a social dilemma (situation). During the pandemic outbreak, most individuals, generally, are inclined to behave selfishly (rationally) and opportunistically (unethically) to maximise their personal interest/gain while compromising others'. The following three real phenomena, particularly happening in Malaysia, are used as examples for the discussion, which cover: (i) competition over daily essentials; (ii) self-honesty of individuals, and (iii) adherence to existing government policies and measures enforcement.

During the crisis where the situation becomes critical, and lockdown measures have been imposed, similar to other parts of the world, such as Italy, Australia, the US, the UK, and Singapore, many people of Malaysia started panic buying and hoarding daily essentials, including groceries (e.g., food and toilet papers), health and medical necessities (e.g., face masks, hand sanitisers, and other cleaning/hygiene products). Consequently, these result in competition/conflict among individuals and a shortage of supply. Worse still, apart from the issue of price gouging of which unscrupulous, self-interested individuals taking this opportunity to inflate the price of the goods for resale, individuals and medical front liners providing essential services, who are at high risks to the infectious disease, have no access to those health and medical necessities.

To explain why those finite essential products are highly exhaustible, although they are not free of costs, justifications should be offered from the lens of the types of economic goods [20]. Those supplies of necessities at the supermarkets and any stores are publically open to all (i.e.,

public domain) and usually are adequate to cater for consumers' demands. These resources/necessities with the economic attributes of excludability¹ and non-rivalry² are considered as club goods, which are believed to be more efficient and sustainable, as they are less congested, as long as the quantity provision and demands of consumers are well governed and controlled [21]. However, without any regulatory system to control and manage, no matter the existing substantial costs involved, due to the overbuying and stockpiling behaviours of most individuals, where demands overwhelm the supply, especially in times of the pandemic, such club-good products get severely scarce.

In other words, those products have essentially collapsed and transitioned into another type of economic good, which is an opposite of club goods, i.e., commons/common pool resources (CPR) (or congestible public goods) with non-excludability and high rivalry characteristics [21]. The CPR-based daily essentials are highly susceptible to overexploitation and hence resource depletion; Ellickson asserted such open-access/public-domain daily goods become "*classic sites for tragedy*" [22]. This phenomenon is best exemplified in the seminal Tragedy of the commons metaphor [11]. Hardin argued that "...*freedom in commons brings ruins to all... Therein, lies the tragedy. Each man is locked into a system that compels him to increase his herd without limit—in a world that is limited*" [11]. Regarding the overbuying and hoarding issues, with no cost-effective mechanism to manage and control individuals' consumption behaviours, those self-interested individuals are granted freedom in terms of unrestricted consumption and access rights to the rivalrous CPR-based products/resources. Therefore, learning lessons from this, some supermarkets have implemented measures, e.g., quota policy, to limit individuals' prevailing overconsumption behaviours, ensuring the essential staples are equally accessed by all.

Sometimes, the above behaviours can be rationalised as self-protective modes, but inadvertently, they are likened to the prisoner's dilemma (see IV in Table 1), in which the public, nevertheless, subjecting themselves to the two prisoners' situation are likely to behave self-interestedly focusing narrowly on their own basic needs. As asserted by Kochaki and Desai, the pandemic outbreak is deemed as a severe threat, causing uncertainty, worries, anxiety, and fear among individuals as to whether there will be enough supply of necessities to sustain their livelihood and how long the pandemic will last; thus, people are motivated to behave selfishly (panic/over buying) and even engage in self-interested unethical acts so as to self-protect and restore the threatened self [14].

Aside from the abovementioned externalities causing dissatisfactions and social conflicts, due to the panic buying issue, people lining up and flocking at the supermarkets for groceries have in fact created mass gatherings/crowds which consequently ensue in a boomerang effect, a situation in which something has the opposite consequence, usually an adverse one, from the one an individual intended. As mentioned earlier, the Malaysian government has urged its people to avoid any mass gatherings events (including religious, sport and social activities) and exercise social distancing in order to curb the viral transmission, but due to panic buying for personal gains, which is of selfish behaviour, it compromises the collective interest because the coronavirus turns out to spread more easily and quickly and thence positive cases of COVID-19 may increase.

¹ Not everyone can get or access to the products without paying any costs; consumers may need to pay for the distance and/or pricing costs to obtain them. The exclusion can also be in a physical or institutional form.

² Any one person's consumption of the goods does not reduce/subtract the amount of the goods (quantity and quality) available to others. This could probably be due to the exclusionary attribute of the goods via a payment system.

Next, in an effort to effectively contain and reduce the COVID-19 cases, via an accurate identification of next potential or high-risk infected targets and places, one of the strategies adopted by the Malaysian government is contact tracing. It attempts to find each sick/infected person and then figure out where they have been to and who they recently interacted with. The process, however, is not easy. It requires individuals to cooperate by honestly self-declaring and disclosing their health conditions, whether they have recently or closely been exposed to any coronavirus positive cases, and their travel history, especially those returning from COVID-19 high-risk countries/hotspots. There are cases, in which, to avoid screening and self-quarantine, some infected/symptomatic individuals did not fully reveal, or lied, about that information, subsequently leading to infecting more people [23] [24]. Besides, as noted earlier, Malaysia recently held one of the largest Islamic congregations (i.e., Tablighi Jamaat) at the Sri Petaling mosque, attended by approximately 16,000 participants including 1500 foreigners. Of the figure, the authorities have only been able to screen 10,533 attendees [25].

Despite various approaches which had been undertaken by the public authorities, the remaining estimated 4,000 are yet to be identified; they refused and were reluctant to come forward to undergoing COVID-19 screening because of fears of being detained for immigration offences (for foreigners), and such exposure will have smeared their reputations [24]. The above scenarios are exactly associated with self-interested unethical and opportunistic behaviours (i.e., being deceitful and misleading) [16], which ultimately put collective interest at stake. As explained by Kouchaki and Desai, under the above perceived threats, in order to maintain a positive self-image, people tend to focus solely on their interests and needs, which interfere with adherence to moral principles and encourage unethical acts [14].

During the lockdown period, the policy is clear that people are ordered to stay at home, most social and economic activities are temporarily prohibited, and travels are only allowed for few limited purposes, e.g., providing essential services, obtaining daily necessities, and other possible emergencies. Despite actions, such as warnings, roadblocks, arrest, and fines, taken by authorities, non-compliance cases still occur and increase; some irresponsible and selfish individuals do not strictly adhere to the order by going out, wandering, and gathering unnecessarily. Also, some non-essential sectors are found operating illegally; it is indeed understandable that, owing to the pandemic, the economy and financial conditions are adversely affected where many businesses closed down and some have gone bankrupt.

Hence, to survive through the critical time, for the sake of their economic interest as well as better financial security, and/or due to fear of losing jobs (as workers), some chose to defy the law. This part is related to anxiety and fear, incentivising individuals to behave self-interestedly and unethically (irresponsibly) [14]. As posited by Kochaki and Desai ... *“threat makes one focus more on survival and become unmindful of moral principles and accumulate resources (e.g., money) as a way of dealing with threat”* [14]. More interestingly, such non-compliance behaviour can likewise be explained from the perspective of greed. Some opportunistic and selfish individuals take this golden advantage to operate their non-essential businesses, since the supply of certain goods is limited (low competition) due to the lockdown. Although there is fear of being caught or sanctioned as well as risks of losing businesses, due to greediness for more profits, people are tempted to break the law potentially causing more infections. This behaviour is confirmed by scholars via numerous experiments that greed rather than fear will be the primary motivation. As Wang and Murhigan [15] suggested: *“greed has consistently driven decisions more than fear as people are influenced by desires for personal gain more than they are by desires to avoid loss”*.

Based on the above theoretical underpinning and discussions, a conceptual framework is developed to showcase interrelationships between the health pandemic of COVID-19, social dilemmas, and negative externalities (see Figure 1).

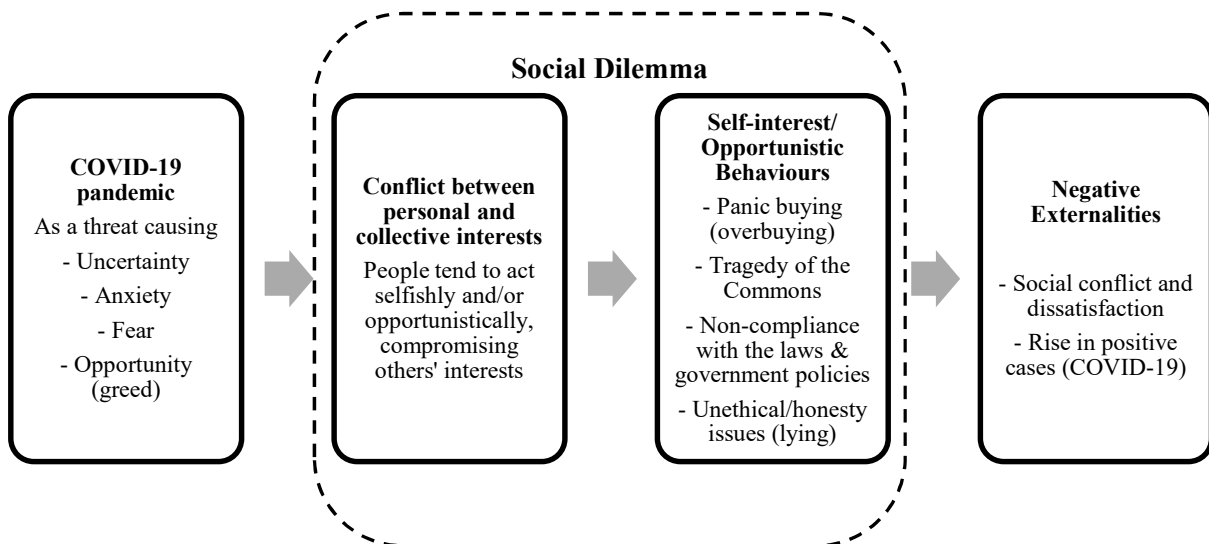


Figure 1: A conceptual framework illustrating interrelationships between COVID-19, social dilemma, and negative externalities

3. Conclusion

Succinctly, this paper has analysed and explained the effects of COVID-19 on social behavioural reactions. It is found that the COVID-19 pandemic, which is deemed as a threat, causes fear, anxiety, uncertainty, and possibly opportunity (greed). These then lead to a social dilemma (conflicting individual-collective interests) situation, in which most myopically rational individuals tend to behave selfishly and opportunistically (unethically) to maximise their private interests at least for the short-term higher returns and benefits, while compromising others' (collective interest). Such self-rationality resulting in collective irrationality contributes to exacerbating existing negative externalities (i.e., more social conflicts, dissatisfactions and inconveniences, an extension of the lockdown periods, and COVID-19 cases may escalate).

As such, a few suggestions dealing with governing and controlling the self-interested social behaviours of individuals are proposed to address the social costs incurred. Among others, (i) more stringent laws should be enforced, i.e., violators should be sanctioned according to the gravity of offences. Fear via a penalty as a consequence can restrict their self-interested behaviour; (ii) governments' incentives/subsidy and financial supports are necessary to alleviate individuals or household's temporarily financial burden caused by the health pandemic so that they may not defy the lockdown order for their economic reasons; (iii) proper communication and awareness raising via social media and technological assistance to convey and obtain accurate information, messages, and knowledge pertaining to the pandemic are crucial to ensure people may not be in the state of anxiety and fear, subsequently leading to panic/over buying and other defective behaviours; and lastly (iv) community surveillance and monitoring using the principle of self-organising (collective action) [20] can be helpful since government interventions alone are not sufficient to stop the invisible enemy. This global threat affects the whole society; mentality with so-called "*this is your problem, not mine*" is not valid

to justify individuals' non-compliance and non-cooperativeness. Governments should urge people to become their monitors (eyes and ears) keeping informal surveillance on other individuals who may break the law or behave selfishly and unethically; individuals who have been under surveillance may not be likely to behave defectively because their actions will be noticed and can be held liable. Aside from demonstrating, in a priori manner, the relevancy of the social dilemma theory in understanding fundamental human behaviour and its changes amid the health crisis, the paper bridges the lacuna in theoretical consensus about human behaviours, facing multiple social dilemma scenarios under an adversarial pandemic. These findings and analyses are generalisable to other geographical settings and certainly warrant empirical studies. Furthermore, as highlighted in the Imperial College report predicting that, under no policy measures or behavioural changes, there will be 510,000 deaths in the UK, 2.2 million in the US [26].

We certainly hope the situation will not arrive at these alarming figures; therefore, this paper provides a different insight that it is vital to incorporate the study's findings and suggestions into government policymaking, although the behavioural effects contributing to curbing the overall pandemic are rather intangible and indirect. They can, at least, help enhance the effectiveness of governments' existing lockdown policy measures enforcement by governing and controlling individuals' attitudes and behaviours, in response to the viral infection in a more holistic, integrated manner. Last but not least, every individual should be made aware that, in times of the pandemic threat, collective cooperation (pro-sociality) is a way out and should prevail over self-interest (competitive) behaviour.

References

- [1] P. SURICO, A. GALEOTTI: The economics of a pandemic: the case of Covid-19. Wheeler Institute for Business and Development, LBS. *London: London Business School*. 2020 Mar 14.
- [2] WORLD HEALTH ORGANISATION (WHO): Coronavirus Disease Pandemic. 2020 [cited 2020 April 20]. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>.
- [3] A. RAPOPORT, A. M. CHAMMAH: Sex differences in factors contributing to the level of cooperation in the Prisoner's Dilemma game. *Journal of personality and Social Psychology*, Dec 2 (6), 831 (1965).
- [4] P. KOLLOCK: Social dilemmas: The anatomy of cooperation. *Annual review of sociology*, Aug 24 (1), 183-214 (1998).
- [5] NEW STRAITS TIMES: Covid-19: Malaysia reports 7 more deaths, 150 new cases. 2020 [cited 2020 April 2]. Available from: <https://www.nst.com.my/news/nation/2020/03/579279/covid-19-malaysia-reports-7-more-deaths-150-new-cases>.
- [6] THE STAR: Covid-19: Cases breach 5,000-mark, but fewest new cases since March 14. 2020 [cited 2020 April 16]. Available from: <https://www.thestar.com.my/news/nation/2020/04/15/covid-19-cases-breach-5000-mark-but-fewest-new-cases-since-march-14>.
- [7] REUTERS: Malaysia expects coronavirus cases to spike as more worshippers traced. 2020 [cited 2020 April 3]. Available from: <https://www.reuters.com/article/us-health-coronavirus-malaysia/malaysia-expects-coronavirus-cases-to-spike-as-more-worshippers-traced-idUSKBN2180BW>.
- [8] DEPARTMENT OF STATISTICS MALAYSIA: Population and Demography. 2019 [cited 2020 March 25]. Available from:

- https://www.dosm.gov.my/v1/index.php?r=column/ctwoByCat&parent_id=115&menu_id=L0pheU43NWJwRWVSZklWdzQ4TlhUUT09.
- [9] CHANNEL NEWS ASIA: WHO expects Malaysia's COVID-19 cases to peak mid-April. 2020 [cited 2020 April 5]. Available from: <https://www.channelnewsasia.com/news/asia/malaysia-coronavirus-covid-19-cases-peak-mid-april-12601814>.
- [10] FEDERAL GOVERNMENT GAZETTE: Prevention and Control of Infectious Diseases (Measures within Infected Local Areas) (No.2) Regulations 2020. Available from: http://www.federalgazette.agc.gov.my/outputp/pua_20200318_PUA91_2020.pdf.
- [11] G. HARDIN: The tragedy of the commons. *Science*, Dec 13, **162** (3859),1243-8 (1968).
- [12] A. RAPOPORT: Decision theory and decision behaviour. *Springer*, Jan 27 (1998).
- [13] R. M. DAWES: Social dilemmas. *Annual review of psychology*, Feb **31**(1),169-93 (1980).
- [14] M. KOUCHAKI, S. D. DESAI: Anxious, threatened, and also unethical: How anxiety makes individuals feel threatened and commit unethical acts. *Journal of Applied Psychology*. Mar **100** (2), 360 (2015).
- [15] L. WANG, J. K. MURNIGHAN: On Greed. *The Academy of Management Annals*, **5** (1), 279-316 (2011).
- [16] O. E. WILLIAMSON: Markets and hierarchies. *New York*, Free Press, 1975.
- [17] O. E. WILLIAMSON: Opportunism and its critics. *Managerial and decision economics*, Mar **14** (2), 97-107 (1993).
- [18] G. H. T. LING, P. C. LENG, C. S. HO: Effects of Diverse Property Rights on Rural Neighbourhood Public Open Space (POS) Governance: Evidence from Sabah, Malaysia. *Economies*, Jun **7** (2), 61 (2019).
- [19] W. POUNDSTONE: Prisoner's Dilemma/John von Neumann, Game Theory and the Puzzle of the Bomb. *Anchor*, 1993.
- [20] E. OSTROM: Governing the commons: The evolution of institutions for collective action. *Cambridge university press*; Nov 30, 1990.
- [21] C. WEBSTER: Property rights, public space and urban design. *Town Planning Review*, Jan 1 **78** (1), 81-101 (2007).
- [22] R. C. ELLICKSON: Controlling chronic misconduct in city spaces: of panhandlers, skid rows, and public-space zoning. *Yale Law Journal*, Mar **1**, 1165-248 (1996).
- [23] THE STAR: Doctors face difficult time. 2020 [cited 2020 March 30]. Available from: <https://www.thestar.com.my/news/nation/2020/03/21/doctors-face-difficult-time>.
- [24] THE RAKYAT POST: Patient Lied About Covid-19 Link, Affected Doctor Speak Up. 2020 [cited 2020 April 3]. Available from: <https://www.therakyatpost.com/2020/03/22/patient-lied-about-covid-19-link-affected-doctor-speaks-up/>
- [25] BENAR NEWS MALAYSIA: COVID-19 Puts Scrutiny on Tablighi Jamaat. 2020 [cited 2020 April 10]. Available from: <https://www.benarnews.org/english/news/malaysian/conservative-group-03202020181010.html>.
- [26] N. M. FERGUSON, D. LAYDON, G. NEDJATI-GILANI: Report 9: Impact of non-pharmaceutical interventions (NPIs) to reduce COVID-19 mortality and healthcare demand. *Imperial College London*. 16 Mar 2020.