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Governance of the Risks of Ridesharing in Southeast Asia: An In-Depth Analysis

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Abstract: Smart and sustainable cities rely on innovative technologies to cater to the needs of their constituents. One such need is for sustainable transport. Ridesharing is one of the ways through which sustainable transport can be deployed in smart cities. Ridesharing entered Southeast Asia in 2013, changing the nature of transportation in the region. As with other disruptive innovations, the introduction of ridesharing comes with risks particularly to employment relations, data privacy, road congestion, and distribution of liability. Regulators across various countries have applied different strategies to govern these risks. We present a case study of five Southeast Asian countries, namely Singapore, the Philippines, Vietnam, Indonesia, and Malaysia, and examine how government authorities in these countries have governed the risks of ridesharing. Smart cities can effectively provide the sustainable transport needs of their constituents by taking a consistent and unified regulatory approach with new technologies and cooperating with regulators across different jurisdictions. Stakeholders should also be involved in the regulatory process to increase the acceptance of new technologies for transport. Smart cities can also deploy regulatory sandboxes and take a proactive governance approach to encourage the development of these new technologies and at the same time control their undesirable risks.



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1. Introduction

Sustainable transport is one of the components of sustainable cities under the United Nations Sustainable Development Goals. The need for sustainable transport is also a central theme in smart cities, with the push for such transport systems seen to reduce the adverse effects of urbanization [1]. Smart cities often rely on technological innovation to provide efficient services to the public [2], and ridesharing is one of the means through which sustainable transport can be used to achieve a smart and sustainable city. Ridesharing can have benefits for the environment. It can change consumer behaviour by reducing preference for car ownership, resulting in emission reductions from the purchase of new cars or the use of older cars [3]. The possible reduction in vehicle ownership and use as a result of ridesharing can also reduce congestion [4]. Increased asset utilization of fewer vehicles, as when they operate on ridesharing platforms, is also one of ridesharing's desirable effects [4].

Ridesharing platforms also benefit disadvantaged individuals. Individuals without access to transportation or who have impaired mobility, such as older adults, can easily travel with ridesharing [5]. Ridesharing is also a source of income for individuals who normally would not have access to employment as well as providing lower-cost transport options [6].

These ridesharing platforms, however, also have negative effects on smart and sustainable cities. High levels of subsidies provided by ridesharing platforms to drivers have been

found to increase the number of vehicles on the road, increasing congestion [7], counteracting the potential benefits of increased asset utilization. There have also been concerns about other negative externalities of ridesharing, including how it might only reinforce existing social disparities [8]. Ridesharing also carries with it new risks, such as the attribution of liability in case of accidents, safety concerns due to lack of professional training of drivers, and the collection of data of passengers [4]. As such, it becomes increasingly important to understand the governance of ridesharing and what strategies are employed by various jurisdictions in the regulation of this new technology.

In Section 2, we present a brief background on ridesharing in Southeast Asia (SEA) and the theoretical framework on governance strategies applied to major risks of ridesharing. Section 3 highlights the methodology used and the case descriptions. In Section 4, we present the results of our analysis of the cases and identify the strategies applied by governments in SEA to address the risks associated with ridesharing. Sections 5 and 6 provide a discussion around the ridesharing in SEA and conclusion, respectively.

2. Background

2.1. Ridesharing in SEA

Ridesharing is a popular form of transportation in SEA. With the increased usage of mobile applications as well as increased demands for mobility, the ridesharing market was able to grow significantly in SEA in a relatively short time. Ridesharing entered SEA in 2013 with the launch of Uber; this was followed shortly after by Grab, which expanded from taxi hailing when it launched a competing service called GrabCar. Later, Go-Jek also entered the four-wheel ridesharing market when it branched out from its motorcycle ridesharing activities. Ridesharing allows commuters to access vehicles for point-to-point transportation through an application. Once a prospective passenger requests a ride, the application provides either a fixed or estimated fare which the passenger can accept or reject. Once accepted, drivers are notified of the trip request who then choose to accept or reject the ride. If a driver accepts, the driver picks up the passenger and conveys the passenger to the destination [9]. Ridesharing has become a significant part of the SEA economy, with its value in 2019 approaching 13 USD billion with 40 million active users [10]. Due to this increasing role in everyday life, SEA countries have sought to address risks in ridesharing.

Prior research has been conducted on ridesharing in SEA covering various areas of interest. These areas include the effect of social media marketing strategies for ridesharing promotion [11], the benefits of taxi ridesharing on congestion and fulfilment of ride requests [12], the role of trust in using ridesharing services [13], user attitudes and other factors that influence users in choosing ridesharing [14], and the benefits of ridesharing as a sustainable business model [15].

2.2. Governance Strategies

As with other innovative technologies, ridesharing through the use of applications results in the creation of risks which in turn prevent full acceptance by competitors, users, and regulators. Adopting an established theoretical framework depicting different types of governance strategies put forth by Li et al. [16], which have been applied in previous studies on the governance of disruptive technologies in the transport sector, including analysis of the risks associated with ridesharing [4,16–18], regulators and other government decision makers employ the following governance strategies when faced with innovative technologies: no-response, prevention-oriented strategy, control-oriented strategy, toleration-oriented strategy, and adaptation-oriented strategy. These governance strategies are elaborated in Table 1 below:

Table 1. A summary of the governance strategies applied to ridesharing based on Li et al. [4,16].

Strategy	Definition and Ridesharing Examples
No-response	Decision makers refrain from taking action on new risks. This inaction could be the result of the lack of information or inability to predict consequences of new technologies [4]. There might also be a rational argument for this strategy, if it is understood that waiting reduces costs, because by not investing in ineffective measures and waiting for more clarity, a better response can be given [11]. In SEA, there was a lack of enforcement action taken at the launch of ridesharing firms due to the lack of clear regulatory guidelines.
Prevention-oriented	Prevention-oriented strategies involve policymakers prohibiting new technologies, such as ridesharing, in order to avoid any of the risks associated with them [4]. In SEA, several countries prohibited the vehicles operating under ridesharing applications due to the absence of regulations governing them.
Precaution-oriented	Precaution-oriented strategies involve “a risk analysis framework consisting of risk assessment, risk management, and risk communication” [16] (p. 8). Due to the risk management involved in precaution-oriented strategies, it emphasizes transparency as well as the selection of a proportionate policy to address the risk involved [16].
Control-oriented	A control-oriented strategy involves the assessment of risk to reduce uncertainties, allowing them to exist but controlling them with regulation [17]). An example for ridesharing is the imposition of licensing and inspection requirements for motor vehicles to be used in ridesharing.
Toleration-oriented	This strategy involves increasing the ability of the systems or organisations to perform well in an uncertain and constantly changing environment and corresponds with the system or organisation surviving and managing a wide range of circumstances [4]. It also means that policy changes or reforms in various situations are prepared in advance [4,19].
Adaptation-oriented	This strategy involves improving the capability of a system or organization to adapt. Several methods are used in this strategy including “learning by doing, public participation, forward-looking planning, co-deciding, and negotiation” [4] (p. 4). In ridesharing, this strategy involves the solicitation of comments and engagement of the stakeholders by regulators or legislators on ways to regulate ridesharing.

3. Method and Case Description

Building on earlier work that sought to explain the governance of risk in ridesharing in Singapore [4], the article seeks to explain the different governance strategies across five SEA countries, namely the Philippines, Singapore, Indonesia, Malaysia, and Vietnam. The choice of these five countries was due in part to the fact that they are some of the largest economies in SEA, and innovative business models such as ridesharing would more likely be active in larger markets. In 2019, the GDP of each of the countries (in million USD) is as follows: Indonesia 1,121,298.3; Malaysia 364,420.4; the Philippines, 377,116.2; Singapore, 372,062.5; and Vietnam, 261,586.5 [20]. The combined population of these five SEA countries as of the middle of 2019 was 509 million [20]. A map of the five SEA countries is set out as Figure 1 below:



Figure 1. A map indicating the location of the five SEA countries. Source: Keepscases ([https://commons.wikimedia.org/wiki/File:Southeast_Asia_\(orthographic_projection.svg\)](https://commons.wikimedia.org/wiki/File:Southeast_Asia_(orthographic_projection.svg))), accessed on 23 May 2021), Southeast Asia (orthographic projection), changed colour and added five labels to countries by Icasiano, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>, accessed on 23 May 2021.

Data collection was conducted by the first author from 2019 to 2021. Interviews were conducted with several government officials and regulators, data privacy experts, researchers on competition policy, legislative aides, and media correspondents. Respondent 1 is a data privacy researcher; respondent 2 is a legislative aide and former regulator; respondents 3, 4, 17, and 18 are researchers on ridesharing and the sharing economy; respondents 5, 7, 11, 13, and 14 are regulators; respondents 6, 10, and 16 are competition policy researchers; respondents 8 and 9 are former regulators; respondent 12 is a media correspondent; and respondent 15 works with a tech start-up. Semi-structured interviews lasted 45 min to 1 h on average.

Secondary data were also collected, focusing on major English language media outlets in the five SEA countries. Data from websites of ministries and government agencies were also collected. Using this data, we examined the governance of ridesharing from its entry into each of the five SEA countries in 2013 until 2021. Different types of risk have been identified in each of these five countries by the respondents and in media coverage concerning ridesharing. Certain countries have identified risks that were not present in others. A timeline summarizing relevant regulatory events for ridesharing is set out in Figure 2 below:

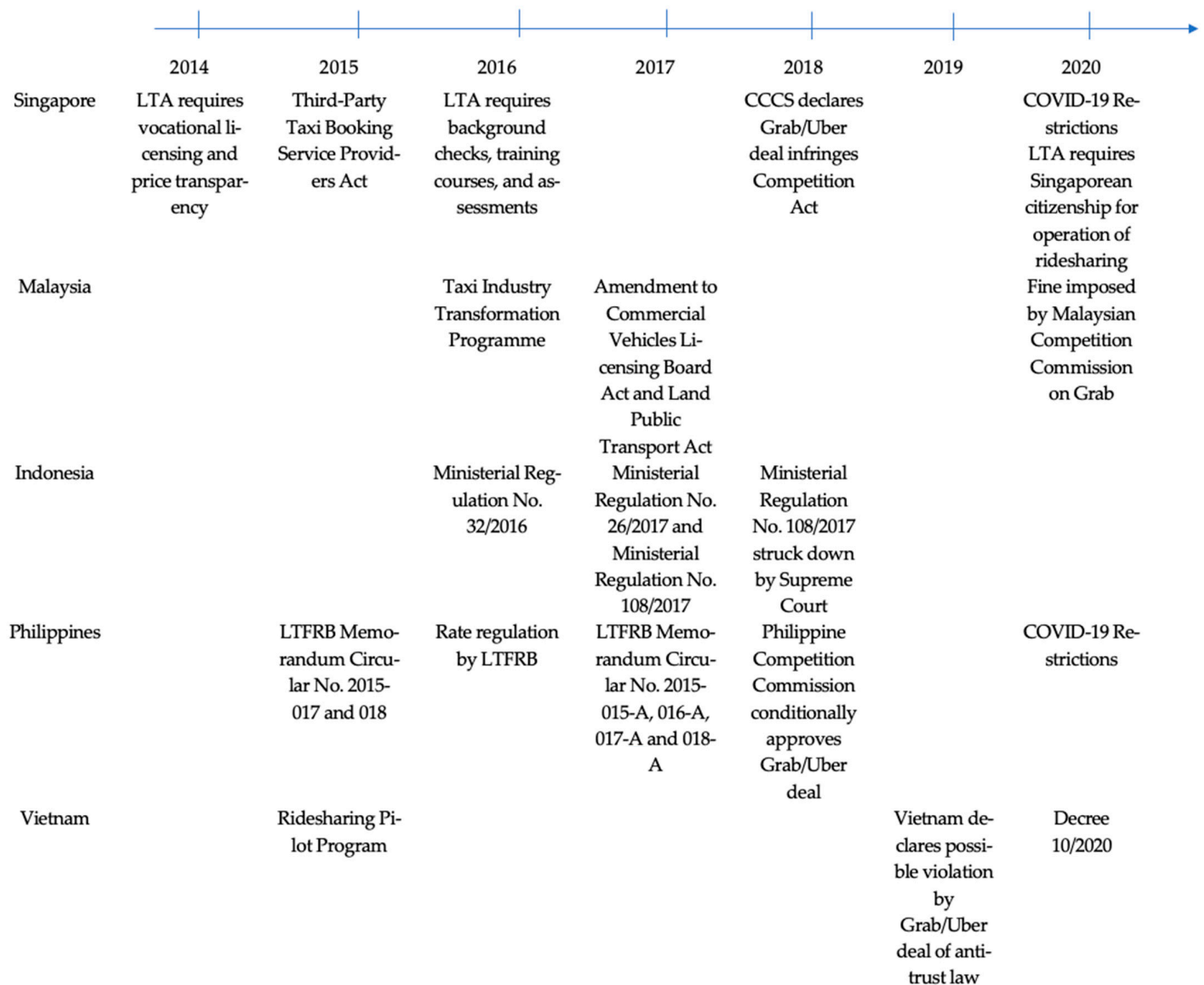


Figure 2. Timeline of significant regulatory events.

In the subsections below, we elaborate on the ridesharing developments in these five countries. A more detailed description of the evolution of ridesharing in Southeast Asia is provided in Supplementary Part S1 of the Supplementary Material [21–66].

3.1. Philippines

In July 2013, Grab entered the Philippine market under the name GrabTaxi, initially offering only a smartphone app that helped match taxi drivers and passengers using the app. [67]. The following year, in February 2014, Uber introduced its ridesharing service in the Philippines [68]. No regulations were in place specifically regulating ridesharing services at the time of Uber’s entry.

In October 2014, after several months of undertaking no enforcement action since Uber’s entry in February 2014, the Philippine transport regulator started its operations apprehending drivers operating vehicles under Uber for not having a valid franchise to transport persons [69]. Following public outcry against the apprehensions, the government transport department announced that it would be working with Uber in order to facilitate the regulation of ridesharing. The transport regulator also stopped apprehending drivers operating under Uber and Grab [70].

In the last quarter of 2014, the transport regulator announced that it would issue rules and regulations that would include vehicles operating under Uber in the “vehicles-for-hire”

category and would subject them to the oversight of the transport regulator [71]. A public hearing was scheduled to determine whether app-based transportation service-providers such as Uber and Grab (then GrabTaxi) were technology providers or engaged in the provision of public services, hence requiring regulation [72].

In the second quarter of 2015, Grab relaunched its GrabCar service [73]. In the same quarter, the transport department announced that it was issuing regulations covering Uber and Grab that would allow them to operate. Uber and Grab would be classified as Transport Network Companies (TNCs). A TNC is defined as “an organization that provides pre-arranged transportation services for compensation using an internet-based technology application or a digital platform technology to connect passengers with drivers using their personal vehicles [74].” Owners of vehicles under TNCs would be classified as Transportation Network Vehicles Services (TNVS) [75]. The accreditation and registration process to operate as a TNC and TNVS started in June 2015 [76].

To register as a TNVS, the applicant needs to prove Philippine citizenship, a passenger insurance policy, and financial capacity. The drivers of the TNVs would also need to prove accreditation by the TNC, have a professional driver’s license, and proof from two law enforcement agencies that the driver had not been convicted of a crime or that there was no criminal suit pending against the driver [77].

The Philippine taxi industry did not welcome new regulations governing ridesharing as, in its opinion, taxis were subject to stricter requirements for franchise awarding. Taxi operators were also limited to a certain number of taxi units versus TNCs whose vehicles were not limited [78]. It is noted that as opposed to taxis that have fares fixed by the transport regulator, the TNVS fare are set by the TNC, subject only “to oversight from the LTFRB in cases of abnormal disruption of the market” [79].

In August 2015, the Philippine government stated that it would begin apprehending Uber and GrabCar drivers who failed to register as a TNVS and secure a public franchise from the transport regulator [80]. In July 2016, a year after the regulations for ridesharing came into force in the Philippines, registration of new vehicles to operate as TNVS was stopped by the transport regulator to clear the backlog of pending applications which at that time were for 29,000 vehicles [81].

In December 2016, the transport regulator received complaints about prices of both Grab and Uber during the Christmas holidays. Reports indicated that customers had experienced fares ranging from 40 to 530 USD. Due to these complaints, the transport regulator set a maximum limit on surge pricing of both Grab and Uber [82].

In July 2017, after a year of the moratorium on registration being in effect, Grab, Uber, and passengers of the ridesharing firms filed an application with the transport regulator seeking to lift the moratorium [83]. It is noted that despite the moratorium, Grab and Uber had allowed new drivers without franchises to operate under them [84].

The transport regulator ordered Uber and Grab to deactivate drivers who registered in their systems after 30 June 2017 and to cease accepting new drivers. Uber did not comply with the order; hence, the transport regulator suspended Uber’s operation for one month [85].

In October 2017, the transport regulator released amended guidelines on TNCs and TNVSs. The amended guidelines explicitly provide for the distribution of liability between the TNC and the TNVS. The guidelines for TNCs explicitly state that it will be liable should it knowingly accredit an ineligible driver [86]. On the other hand, the liability of TNVSs were clarified as being equal to that of other modes of transport [87].

In the first quarter of 2018, the transport regulator limited the number of vehicles that could register to operate under ridesharing firms. The cap was set in order to control vehicle congestion in Manila [88].

In March 2018, Grab and Uber announced that Grab would be acquiring the SEA operations of Uber [89]. The deal was subject to anti-trust investigation starting on 3 April 2018 [90]. In August 2018, the acquisition by Grab of the Southeast Asian assets of Uber

was approved by the competition authority, subject to conditions that its quality of service and its prices do not unreasonably differ from pre-acquisition levels.

In March 2019, Go-Jek's bid to enter the Philippines was denied on the ground that it failed to satisfy the minimum 60% Philippine equity requirement [91]. In 2020, the privacy commission prohibited Grab from monitoring its riders with video and audio equipment [92].

3.2. Singapore

Uber launched its Singaporean operations in January 2013, followed by its rival Grab later in October of that year. During this time, Uber and Grab operated in Singapore without regulation, being seen as technology companies and not transport providers. They were also seen as a means to complement taxi transport [4]. Due to the prevalence of ridesharing, tensions began to rise between ridesharing companies and taxi drivers. Ridesharing vehicles were seen as less regulated, and due to this, taxi drivers demanded that ridesharing be subject to the same regulations [4]. Towards the end of 2014, the Singapore Land Transport Authority (LTA) issued several regulations that required registration of ridesharing applications with the LTA, requiring vocational licenses for drivers, and increased price transparency, among others [93].

The following year, the Singapore Parliament enacted the Third-Party Taxi Booking Service Providers Act that required registration of ridesharing vehicle operators under the LTA for companies that own more than 20 taxis [94]. Later in that year, the Ministry of Transport led a review of ridesharing and taxi services, consulting various stakeholders in the process. Stakeholders affiliated with the taxi industry sought the harmonization of regulations for the taxi industry and the ridesharing industry, with stakeholders proposing that vehicles operating under ridesharing services be required to undergo the same safety checks and procure the same insurance at taxis [4].

In 2016, new regulations were released that would require drivers of ridesharing vehicles to undergo background checks, attend training courses, and pass tests. Simultaneously, training for taxi drivers was shorted in duration and now included training on the use of a global positioning system. Later in the same year, the LTA undertook a review of existing taxi regulations and announced the removal of minimum daily mileage requirements. The following year, it was reported that Uber suffered a data breach involving 380,000 accounts in Singapore [4]. Also in 2016, the LTA declared that Grab's carpooling service, GrabHitch, between Singapore and Malaysia was illegal for non-compliance with Singaporean regulations [95].

On 30 March 2018, a few days after the announcement of Grab's acquisition of the SEA assets of Uber, the Competition and Consumer Commission of Singapore (CCCS) announced that it had reasonable grounds to believe that the transaction violated the Competition Act. The CCCS proposed interim measures that included the maintenance of independent pricing and pricing policies, and a condition that the parties should not integrate their businesses pending approval of the deal [96].

In May 2018, Go-Jek announced that it would be entering the Singaporean market [97]. Two months after, the CCCS concluded its investigation of the merger and had a finding that it substantially lessened competition and has infringed the competition act [98]. The CCCS proposed remedies that prevented Grab from requiring drivers to operate exclusively on its platform [98]. The CCCS also proposed that Grab maintain the same pricing algorithm as well the rate of driver commissions that were in place prior to the transaction [98].

In September 2018, the CCCS rendered its decision with a final finding that the merger resulted in a substantial lessening of competition in the ride-hailing market. CCCS finalized its proposed remedies and also imposed a fine on Grab and Uber for a total of SGD 13 million. The remedies would remain until a competitor maintains a market share of 30 percent of total rides for six months in a row [99].

In December 2018, industry associations proposed to the Land Transport Authority (LTA) that taxis and private-hire drivers, such as those operating under Grab, should be

allowed to use bus stops and bus lanes in order to better provide flexible transportation options as opposed to fixed-route transport offered by buses and the MRT [100]. The industry associations likewise proposed that Singapore transport authority be allowed to act as a third-party mediator for any disputes between drivers and operators [101].

In January 2019, Go-Jek opened its services to all customers in Singapore [102]. It was reported that Go-Jek's prices were approximately 10–30% lower than the prices of Grab; Go-Jek also reportedly provided better driver benefits [103]. Following Go-Jek's entry into the Singaporean market, Grab started offering promotional discounted fares for rides again, despite earlier statements that it would no longer be offering such promotions [104].

Also in January, the LTA announced that it was proposing changes to the regulatory and licensing framework of private ridesharing vehicles. The proposed regulations, according to the LTA, would harmonise the regulations between taxis and private ridesharing services as they were both transport services [105].

In September 2020, the LTA announced that new guidelines would take effect governing the operation of ridesharing vehicles. Under the new guidelines, drivers would have to be Singaporean citizens. The minimum age of drivers would also be raised to 30, raising it from the original 20 years old. The new guidelines would only affect new applicants and not existing drivers [106]. In the same month, ridesharing firm Grab was fined for its fourth data breach in 2 years. The breach involved providing multiple drivers access to passenger names and profile pictures, as well as trip details [107].

3.3. Indonesia

In 2014, Uber and Grab entered the Indonesian market. Both companies undertook soft launches around the same time [108,109]. In January of the following year, Go-Jek launched a mobile application to connect motorbikes to passengers. Go-Jek originally operated as a platform to hail motorbikes through a call centre [110,111].

In the second quarter of 2015, Grab undertook a full launch of its GrabTaxi and Grab-Car service in Jakarta following an earlier launch in Bali [112]. In the last quarter of 2015, the transport ministry banned ridesharing applications, whether operating motorbikes or 4-wheeled vehicles, as these ridesharing applications did not comply with the relevant laws on public transportation [113]. The president of Indonesia withdrew the ban the next day after public backlash [114].

In early 2016, violent conflicts erupted between driver of traditional modes of public transportation and drivers of ridesharing vehicles [115]. In March of the same year, the Indonesian transport ministry declared that Uber and Grab were in violation of transportation regulations. Public vehicle operators stated that Uber and Grab negatively impacted their income [116]. Following the announced ban of ridesharing applications, the transport ministry announced that it would be issuing regulations for the operation of ridesharing services, with vehicles required to undergo roadworthiness tests similar to taxis [117].

In the latter part of March 2016, Go-Jek entered the market for online hailing of taxis with its Go-Car service [118]. Following this, Indonesia's largest taxi operator, Blue Bird, entered into a partnership with Go-Jek, allowing Go-Jek users to hail Blue Bird taxis using the app [119].

In April 2016, the ministry of transport issued regulation No. 32 of 2016 regulating ridesharing [120]. The regulation provided that vehicles operating under ridesharing apps should have an engine with a minimum displacement of 1300 cc and that car pool facilities be provided. This resulted in similar regulations for taxis and ridesharing [121]. The same regulations also prohibited vehicles used for ridesharing from being placed under individual owners, with ownership of these vehicles required to be under a corporate entity [122]. The new regulations were not welcomed by ride-hailing drivers, with drivers stating that these regulations would force drivers to become employees as opposed to entrepreneurs [122]. Drivers also expressed dissatisfaction with the requirement to obtain public driving licenses and undergo roadworthiness tests [122]. Following protests against the requirement for cooperative ownership of vehicles imposed by the transportation min-

istry, the ministry for cooperatives clarified that private vehicles operated by ridesharing drivers need not be transferred to cooperatives [123].

Ministerial Regulation No. 32/2016 was eventually met with protest in 2017 that called for the revocation of the regulation [124]. The Indonesian government announced it would undertake revisions of Ministerial Regulation No. 32/2016. Among the changes announced were fare regulation by the introduction of floor and ceiling prices for trips, maximum fleet quotas, and bumper stickers to identify cars operating under ridesharing services [125]. The revised regulations, Ministerial Regulation No. 26/2017, created the app-based transportation provider classification that prohibits ridesharing services from directly acting as transportation companies and requiring them to “collaborate with a public transportation company that holds a transportation license” [121] (p. 1).

The imposition of price regulation was due to concerns of traditional public transport operators that Go-Jek, Grab, and Uber were allegedly practicing predatory pricing [126]. However, the fleet and fare restrictions were later struck down by the Indonesian Supreme Court in August 2017 [127].

The government revised the regulations governing ridesharing and issued Ministerial Regulation No. 108/2017 [128]. While the regulations also contained provisions relating to fleet quotas and price controls, the imposition of price controls included a requirement to discuss with stakeholders prior to imposition [129]. The revised regulations also required that insurance be procured by ridesharing firms [130].

In March 2018, Grab acquired the SEA assets of Uber. Following this acquisition, the Indonesian government announced that it planned on creating its own ridesharing application to be owned by a state-owned enterprise to give more consumer choice and to promote competition in the market [131].

In September 2018, Ministerial Regulation No. 108/2017 was also struck down [128]. The transportation ministry subsequently issued Ministerial Regulation No. 118/2018. Several requirements were removed from this regulation, including the requirement to use stickers identifying vehicles used for ridesharing and roadworthiness tests. The regulation likewise included floor and ceiling rates [128].

In July 2020, it was reported that Grab and its car rental partner were fined by the competition authority of Indonesia in the amount of US 2 million for contravening Indonesia’s competition law. Grab alleged favoured drivers who rented vehicles from Grab’s car rental partner in the allocation of ridesharing orders from customers [132].

3.4. Malaysia

In June 2012, MyTeksi, GrabTaxi’s local name, launched in Malaysia, allowing passengers to book taxi rides through SMS and through a mobile application [133]. In 2014, Uber entered the Malaysian market offering its UberX and UberBlack services in Kuala Lumpur [134]. MyTeksi also launched the GrabCar service in the same year [135]. Drivers of ridesharing vehicles who did not have Public Service Vehicle (PSV) licenses were apprehended by the transport commission [136].

In June 2015, taxi drivers protested GrabCar, stating that after the introduction of the services in 2014, their incomes dropped. Drivers also protested the different qualifications required for ridesharing drivers and taxi drivers—taxi drivers have to possess a vocational license and undergo regular medical checks [137]. The transport commission subsequently issued a statement that it would apprehend cars used for ridesharing that would violate transport rules [138]. In that year, the transport commission continued apprehending GrabCar and Uber drivers without PSV licenses, emphasizing that while the services were not illegal but that operating without a license was illegal [136].

Later in the same year, there were several incidents of harassment of GrabCar and Uber drivers, with their vehicles being vandalised or damaged, often by taxi drivers. Ridesharing drivers likewise reported harassment from their passengers [139]. During this time, taxi drivers and operators began apprehending Uber and GrabCar drivers who were ferrying passengers in their area [140].

Tensions between taxi drivers and ridesharing service providers resulted in hundreds of taxi drivers in Kuala Lumpur protesting the alleged failure of the transport commission to adequately control and apprehend drivers operating under ridesharing services [141].

In March 2016, the transport commission indicated that it would be regulating Uber and GrabCar and appealing to taxi drivers, it stated that regulation of these services would take time [142]. However, public support for taxi drivers was on the decline due to cheaper fares of ridesharing services and the perception that taxi drivers provided a lower quality of service [143]. Eventually, the transport commission recommended the legalisation of ridesharing services in Malaysia [144].

In August 2016, the Malaysia Cabinet authorized the transportation commission to regulate ridesharing by the end of 2016 [145]. Taxi drivers were dissatisfied with the decision, adding that problems with illegal taxis in the city should first be resolved [146]. In the same month, the transport authority unveiled a program for the modernization of the taxi industry called the Taxi Industry Transformation Programme (TITP) [147]. The programme would require the registration of ridesharing companies to incorporate in Malaysia, subjecting them to local taxation. Vehicles operating under ridesharing companies must also register with the transport authority and pass roadworthiness tests. The transport authority would also require pre-screening of drivers seeking to operate either taxis or ridesharing vehicles [147]. Several reforms were also intended for taxis. These taxi industry reforms include liberalizing requirements for the kind of vehicles that may be registered as taxis, revising taxi rental contract terms in favour of the taxi driver, and introduction of key performance indicators for taxi operators in order to govern minimum hours of operation of taxi drivers, among others [147].

In October 2016, the tourism and culture minister announced that vehicles operating under ridesharing services would follow the same rules and regulations as taxi drivers, which include registration, vehicle inspection, accident coverage insurance, and PSVs for drivers [148].

The bill regulating ridesharing was tabled for parliamentary approval in April 2017. Under the proposed law, ridesharing vehicles would need intermediation business licenses and would be subject to regulation by the Commercial Vehicles Licensing Board [149]. This was welcomed by consumers who believed that regulating the ridesharing vehicles would make the service safer [149]. The law was passed in July of 2017 [150]. The law provided, among others, for the recognition of ridesharing services, and the requirement of registering as a business in Malaysia as an intermediation business [151].

Despite public support for legalisation, taxi drivers still opposed ridesharing services as it caused a drop in their income, with taxi driver income dropping by 30% in some Malaysian states [152].

Towards the end of 2017, the government of Malaysia itself was encouraging taxi drivers to utilise the ridesharing platforms such as Uber and Grab to allow taxis to compete with private ridesharing vehicles and to improve taxi driver income [153].

In March 2018, Grab announced that it would be buying the SEA assets of Uber. In the same year the Malaysian Competition Commission (MyCC) announced that it would probe the merger [154]. However, MyCC stated that it could only take action once a party abused its monopoly status [155]. The month following the transaction, the Malaysian government stated that it sought to level the playing field between taxis and ridesharing services, and that due to this, Malaysia would enforce its new policies regulating ridesharing [156].

In August 2018, the Malaysian transport minister continued prior government encouragement for taxi drivers to operate on ridesharing platforms. This was along with what the minister described as “softened” regulations to allow taxi companies to compete with private ridesharing vehicles [157].

3.5. Vietnam

In February 2014, GrabTaxi entered the Vietnamese market, first establishing operations in Ho Chi Minh City with a taxi-hailing service [158]. In June of the same year, Uber entered the Vietnamese market, as well as Ho Chi Minh City [159].

Towards the end of 2014, Ho Chi Minh City authorities started a crackdown of cars operating under Uber. Ho Chi Minh City called the operations of Uber illegal and started apprehending Uber drivers and imposing fines on them for operating unlicensed taxi businesses [160].

In December 2014, taxi associations called for the prohibition of Uber due to alleged unfair competition with the taxi industry. The taxi association cited that Uber did not pay taxes and does not have to comply with rules applicable to taxis, such as carrying signage [161]. In January 2015, the Ministry of Transport stated that it had no control over the business of Uber as it operated as an information technology enterprise and not as a transport company. However, the Ministry clarified that it must obtain a business license and must partner with licensed transport operators [162].

In July 2015, Grab proposed a scheme for regulation to the Ministry of Transport of Vietnam which involved the limited licensing for a two-year trial aimed at “applying technology to the transportation sector”. Grab subsequently received Ministry of Transport approval of the scheme, making it the first licensed ridesharing application in Vietnam [163]. While Uber applied for the same treatment, it was consistently rejected for failing to declare and pay taxes in Ho Chi Minh City [164].

In 2017, taxi associations criticised what they viewed as the preferential treatment of Uber and Grab, stating that both companies enjoy markedly low taxes compared to traditional taxis [165].

In April of the same year, the Ministry of Transport approved Uber’s application for the contract allowing it to operate on a trial scheme [166]. In the same month, Hanoi and Ho Chi Minh City officials publicly stated that they were considering limiting the number of vehicles allowed to operate under ridesharing services as they found that these services contributed to congestion. Other than increased congestion, it was found that Uber and Grab were causing revenue losses for taxi companies and drivers, resulting in drivers quitting or suffering a reduction in their earnings [167].

In January 2018, Uber and Grab drivers protested the fare structures of both ridesharing platforms. Both Uber and Grab receive more than 25% of fares paid for every ride. Drivers under both platforms wanted a return to the 15% share, with drivers stating that the new fare structure is unreasonable [168].

Following the acquisition by Grab of Uber’s assets in SEA, Vietnam launched an in-depth probe of the deal [169]. Other than the investigation, Grab was the subject of public complaints due to allegedly rising prices and poor service quality [170]. Consumers have likewise reported the discontinuation of fare promotions that Grab regularly provided prior to the exit of Uber [170].

In August 2018, Go-Jek entered the Vietnamese market starting with Ho Chi Minh and launching in Hanoi the next month [171]. Towards the end of that year, a suit involving Grab and taxi company Vinasun was resolved by a Vietnamese court. The suit involved a complaint by Vinasun that Grab committed several errors in its operations in Vietnam that damaged Vinasun’s operations, such errors included reducing the market share of Vinasun. The errors in Grab’s operations were, according to the court, failure to follow the law on automobile transportation that requires ensuring a certain number of vehicles and a service quality level [172].

In January 2019, Vietnam found that the Grab–Uber deal potentially violated its anti-trust law as the merged business of Grab and Uber had a market share exceeding 50% [173].

With respect to regulation, there were several announcements from the government about the intent to regulate ridesharing services. In 2017, the Hanoi City government proposed draft guidelines that would require vehicles operating under ridesharing service

providers to have to display taxi signs on their roofs [174]. The Ministry of Transport likewise drafted a circular, amending the existing Decree No. 86/2014 that would regulate Uber and Grab, with a new category for the use of software to connect operators, drivers, and passengers [175].

In January 2018, it was reported that the Ministry of Transport submitted a draft circular that would regulate ridesharing apps. Ridesharing apps would have to comply with several conditions, including possession of a licence to do business and a certification from the ministry of transport that applicants have completed registration. Other measures to ease tax collection were also sought to be introduced [176].

In April 2020, Decree 10/2020 came into effect, which provided for updated regulations on ridesharing. Such regulations included badges for vehicles involved in ridesharing [177]. It also included confidentiality obligations with respect to passenger and driver data [178].

3.6. COVID-19 and Ridesharing in SEA

In March 2020, the World Health Organization declared that there was a pandemic caused by the coronavirus disease-2019 (COVID-19) [179]. The pandemic resulted in land transport authorities limiting the use of public transport and ridesharing vehicles. In the five SEA countries, Grab provided financial assistance to its drivers [180], while Go-Jek did the same in countries where it operated [181].

The Singapore LTA provided guidance to drivers of point-to-point vehicles that they could refuse conveyance to or offload passengers who do not wear masks [182]. In reaction to COVID-19, the Transport Ministry in April 2020 revoked legislation allowing carpooling, rendering the service illegal for both ridesharing platforms and the general public [183]. The Singapore government also provided cash assistance to drivers of ridesharing vehicles [184]. For its part, Grab introduced precautionary measures above those required by regulators, such as prohibiting passengers from the front seat. Grab also removed the penalty for cancelling rides in case either the driver or passenger appeared unwell or was not wearing a mask [185].

In the Philippines, both drivers and passengers of ridesharing vehicles were required by authorities to wear masks [186]. Other restrictions included limiting the maximum passengers to two and requiring cashless payments for ridesharing [186]. Grab also allowed either passengers or drivers to cancel a ride in case the other did not wear a mask [187]. It also required its drivers to put up non-permeable plastic barriers that would separate them from their passengers and prohibited eating within vehicles [187].

In Indonesia, while restrictions were imposed on motorcycle ride hailing, it does not appear that similar restrictions were imposed on four-wheeled ridesharing [188]. Grab introduced GrabCar Protect, which provided vehicles with plastic partitions between drivers and riders. The service also required both drivers and passengers to answer a form about COVID-19 symptoms before they are allowed to book a vehicle [189].

In Malaysia, Grab also introduced GrabProtect, requiring online health declarations for passengers, mask wearing for passengers and drivers, and encouraging cashless payments. As in other countries, Grab also allowed either passengers or drivers to cancel rides where the other did not wear a mask [190]. While movement controls were imposed in Malaysia by government authorities, it does not appear that ridesharing was restricted during the period when these were in effect [191].

In Vietnam, Grab voluntarily suspended its ridesharing service at the start of the COVID-19 pandemic in order to assist in containing the virus [192]. It is noted that there do not appear to have been significant government-imposed restrictions on ridesharing in Vietnam as a result of the COVID-19 pandemic.

4. Results: Case Analysis

In this section, we highlight the issues associated with ridesharing and how such issues are governed in each of the individual countries reviewed. We also review the

governance of issues of COVID-19 as they relate to ridesharing. Set out in Table 2 is a summary of the issues identified in each of the five SEA countries.

Table 2. Issues identified in five SEA countries.

Malaysia	Indonesia	Philippines	Vietnam	Singapore
Influence on incumbent industries	Influence on incumbent industries Privacy	Influence on incumbent industries Privacy	Influence on incumbent industries Privacy	Influence on incumbent industries Privacy
Liability and Insurance Safety	Liability and Insurance Safety	Liability and Insurance		Liability and Insurance Safety
Competition and network effects	Congestion Employment	Congestion	Competition and network effects Government revenue collection	

4.1. Issue in Ridesharing in SEA

4.1.1. Influence on Incumbent Industries

Disruption brought about by ridesharing was a primary area of concern for industry incumbents across the five SEA countries. The Philippine taxi industry had complaints about ridesharing relating to different treatment with respect to accreditation, as an example. Taxis had to be specifically labelled and registered as such from the start as against ridesharing vehicles that could register even a few years after purchase. Different fare structures also favoured ridesharing initially (respondents 2, 8). As noted, ridesharing applications were brought under fare regulation by the Philippine land transport regulator [82].

Ridesharing also proved a concern for taxis due to the competition they posed on the incumbent industry in Singapore. There were reports of reduced taxi demand from when Uber and Grab entered the Singaporean market. Further, the different regulatory treatment of ridesharing vehicles and taxis resulted in an uneven playing field that may have unduly benefited ridesharing [4]. According to respondent 7, the entry of ridesharing service providers negatively affected taxi companies financially. Taxi drivers switched to driving for ridesharing providers resulting in loss of income for taxi companies as the business model of these companies involves renting out taxis to their drivers.

According to respondent 7, at the time when ridesharing was just starting in Singapore, the only vehicles allowed to convey from point to point were taxis, which were considered public transportation. Since legislation was grey about what could be considered public transportation at that time, ridesharing services would not be considered as being subject to the same regulation as taxis. While private conveyance of passengers was previously done in small groups, the scale of ridesharing companies amplified this problem. This caused ripples in the taxi industry—they were subject to licensing conditions versus ridesharing companies not subject to licensing. There was no professional license and no regulatory requirement that would allow regulators to keep track of how many drivers there were.

In Indonesia, price competition between traditional taxis and minivans and vehicles operating through ridesharing apps was a major concern. Respondent 6 noted that the primary concern was alleged predatory pricing by ridesharing services. In connection with this, the government has on multiple occasions attempted to set price floors and ceilings (respondent 6). Previous attempts have been struck down by the Supreme Court of Indonesia; however, regulations of the transportation ministry will again provide for price regulation and will limit price promotions [193].

The Indonesian government also imposed several other regulations that would treat vehicles operating under ridesharing services similar to taxis and other traditional modes of transportation. These included professional licenses and roadworthiness tests for vehicles (respondents 1, 5, and 6). The proper mode of regulating ridesharing has also been a

concern in Indonesia. According to respondent 4, ridesharing operators claim they are technology companies and not transportation operators and they are only third parties that match demand to supply of drivers. Hence, they cannot be regulated in the same way that traditional transport mode, such as how taxis are regulated.

The taxi industry associations in both Hanoi and Ho Chi Minh had complaints about ridesharing relating to different treatment with respect to formal requirements, such as business permits, and financial requirements such as compliance with tax laws. It is noted that in the case of Vietnam, there was specific court action imposing fines on Grab due to alleged unfair competition practices that led to losses for an industry incumbent. Driver income was also a salient concern in Vietnam. Protests were staged by drivers under ridesharing services due to changes in fare-sharing schemes between the ridesharing apps and their drivers. Respondents have noted that other modes of public transport such as buses have reduced operations since ridesharing started in Vietnam (respondent 17).

Driver income was also a salient concern in Indonesia. Protests were staged by drivers under ridesharing services due to low incomes. In connection with this, drivers demanded higher per kilometre fares [194]. Respondents have noted that due to the number of drivers who operate on ridesharing firms, the number of passengers of licensed taxis has decreased. Taxis function on a rental scheme where the driver has to meet a certain monetary quota in order to pay the owner or the operator of the taxi. Due to diversion of passengers to ridesharing companies, taxi drivers have had to work longer hours (respondent 1).

Price competition between traditional taxis and minivans and vehicles operating through ridesharing apps was also major concern in Malaysia. Drivers have reported that their incomes went down by 30% [152]. Taxi drivers have also protested against ridesharing services on several occasions. Violence against drivers under ridesharing services has also been a common occurrence (respondent 10). One other issue is the different regulations imposed by the government on ridesharing service providers and on the incumbent taxi industries, with taxis facing stricter regulations (respondents 10 and 18).

4.1.2. Privacy

Following the data breach involving Uber in 2016, the possibility of privacy breaches involving customer data has been a continuing concern with ridesharing [195]. Issues of data privacy were also raised during the acquisition by Grab of the SEA assets of Uber [196]. In both instances, the privacy commission of the Philippines took action under the provisions of the Data Privacy Act of 2012. Subsequently, the privacy commission prohibited Grab from monitoring its riders with video and audio equipment [92]. Further problems are posed by the manner in which data are stored by ridesharing applications. According to respondent 9, such data may not be stored in the Philippines. In case there is a breach, there may be difficulty in enforcing an order in another country, particularly in another country where there is no cooperation present agreement between the data privacy authorities. It is possible that in such a case, the erring parties can avoid liability and say that the relevant agency has no jurisdiction or authority to enforce its orders in another country. Another method through which privacy issues can be difficult to remedy is when data protection functions are outsourced to third party providers. Liability falls on the third party rather than on the company that gathered the data. Respondent 9 also stated that the rapidly expanding services of ridesharing platforms are also a cause of concern with respect to data protection. The personal data of a consumer are needed to use each kind of service the ridesharing platform offers (e.g., ridesharing, e-payments, and food services). However, in order to use just one feature of an application requires consent to use the data in the other services despite a consumer having no intention to use such other services.

Similarly in Singapore, privacy is a concern due to the data-intensive nature of ridesharing applications. Particularly, privacy became a larger cause of concern owing to reported data breaches that affected 380,000 account holders of Uber. Such data might include trip data, location data, and such other data that would make account holders and their activities easily identifiable. Respondent 3 noted that the company using data

for multiple purposes was not a significant concern, so long as the use was internal to the company.

In Indonesia, privacy was highlighted as a concern due to the data-intensive nature of ridesharing applications, with there being no way for individual customers to verify that their data are being used in accordance with the terms of use that they agreed to (respondent 1).

Privacy was also a concern in public coverage of ridesharing in Vietnam. In connection with a suit filed by a local taxi operator against Grab for unfair competition, one of the allegations was that Grab experienced issues with respect to customer data management and customer confidential information [197]. Subsequent regulations addressed this with the introduction of confidentiality obligations for passenger and driver data [178].

4.1.3. Liability and Insurance

Liability in case of accidents has also been featured prominently in public discourse in the Philippines. Congressional inquiries have been called about distribution of liability between the driver and the ridesharing firm in case of accidents [198]. Current regulations attribute liability primarily to the driver of the vehicle [199], with the ridesharing firm being held liable only in case of failure to exercise due diligence in accrediting the driver involved [86]. The transport regulator has also required that insurance be availed by drivers of ridesharing vehicles, similar to those required for other transport providers such as taxis [200]. In Singapore, it was noted that as ridesharing became more widespread, it attracted several drivers who were not trained to drive professionally or who would prioritise earning money over safety [4].

In the case of liability for accidents, there is a concern in Indonesia that only drivers, and not the ridesharing company, become liable when accidents occur. However, insurance for ridesharing operations was mandated to address this concern [127].

In Malaysia, insurance requirements were imposed on ridesharing service providers after regulations came into force. However, Grab has indicated that current insurance options are insufficient for their business [201].

4.1.4. Safety

Safety of ridesharing services was indicated as the primary concern of a consumer survey conducted in Indonesia [202]. In connection with this, the transport ministry imposed professional licensing requirements on ridesharing services [203]. Insurance was also required in subsequent regulations [130]. Safety was a particularly salient concern with respect to female riders, as there were reported instances of drivers harassing female customers (respondent 4). According to respondent 4, this issue was not addressed through government regulation but through public outcry, causing ridesharing companies to hide personal details of passengers from the driver. The lack of an employment relationship between a ridesharing driver and the ridesharing company also contributes to the issue of liability, as the ridesharing company cannot exercise control over an independent contractor and impose the same safety standards as an employee (respondent 16).

Licensing and safety have been highlighted in Singapore. Vehicles operated under ridesharing services were originally not subject to any inspections or roadworthiness checks, nor were special licenses required for the drivers of such vehicles. Subsequently, licensing and safety requirements were imposed on ridesharing [4].

Similar concerns were highlighted in Malaysia, with consumers believing that regulation of ridesharing services would make them safer [149]. Other safety regulations such as the requirement to possess fire extinguishers were added subsequently [201].

Liability in case of accidents has also featured prominently in public discourse in the Philippines. Congressional inquiries have been called about the distribution of liability between the driver and the ridesharing firm in case of accidents [198]. Current regulations attribute liability primarily to the driver of the vehicle [199], with the ridesharing firm being held liable only in case of failure to exercise due diligence in accrediting the driver

involved [86]. The transport regulator has also required that insurance be availed by drivers of ridesharing vehicles, similar to those required for other transport providers such as taxis [200].

4.1.5. Competition and Network Effects

In Malaysia, reduced income of ridesharing drivers was an issue after the Grab–Uber merger, as Grab no longer provided the same level of driver incentives that it provided when Uber was still present in the market (respondent 10). Price issues were also highlighted after the Grab–Uber merger with prices increasing after the transaction occurred. According to respondent 10, regulatory action could not be taken to prevent the Grab–Uber merger, which was identified as the cause of the price increase, due to Malaysian law not providing for a review of mergers that may substantially lessen competition.

In Vietnam, respondent 15 raised the concern that network effects would prevent competitors from imposing competitive constraint on dominant ridesharing players. The respondent stated that the dominant ridesharing players have services that feed into each other and loyalty rewards for using one service that can be used when using the ridesharing provider's other services. As such, smaller players cannot effectively constrain the dominant ridesharing providers.

4.1.6. Congestion

Congestion caused by the number of vehicles operating on ridesharing platforms has been highlighted by the Indonesian government as a cause for concern. Controlling traffic congestions was through fleet quotas on ridesharing services to be imposed by the transport ministry [127]. However, non-regulatory approaches such as improving transport infrastructure, including transport terminals, were also featured in public discussion [204]. Respondent 6 noted that there is no regulatory limit as to the number of vehicles that can be accepted by ridesharing platforms. He noted that this is contrary to Indonesia's goal of lessening traffic and reducing congestion. Credit policies are also generous for the purchase of vehicles, and this leads to an increased supply, leading to more congestion.

Similarly in the Philippines, congestion caused by the number of vehicles operating on ridesharing platforms has been a frequent cause for concern. The transport regulator put in place a cap limiting the maximum number of vehicles that may operate on ridesharing platforms in order to minimize added congestion on roads brought about by vehicle acquisitions to participate on ridesharing platforms [205]. According to respondents 2 and 10, the imposition of a vehicle cap also makes difficult for other ridesharing applications to enter the Philippine market.

4.1.7. Employment

Employment was a salient concern in Indonesia. The contractual arrangement between ridesharing providers and their drivers resulted in drivers being classified as independent contractors; however, drivers perceived themselves as employees (respondents 4 and 12). The lack of a formal employer–employee relationship prevents drivers from demanding benefits that were promised but allegedly not paid to them (respondent 4). Social insurance has also not been provided to the drivers (respondent 4). The lack of an employer–employee relationship might also lead to the inability of ridesharing providers to check whether performance and safety standards are being complied with by their drivers (respondents 1 and 4).

4.1.8. Government Revenue Collection

Revenue collection was a noted cause for concern in Vietnam, as the Ho Chi Minh tax authorities could not collect taxes on Uber due to their corporate structure of no office set-up in the country. Tax collection suits were also contested by Uber until it withdrew operations in the country after its acquisition by Grab, with Uber eventually dropping suits contesting its tax liability and paying its back-taxes in September 2018 [206]. A respondent

noted that disagreement on revenue collection led to the possible exit of Uber from the Vietnamese market (respondent 17).

4.1.9. Risks in Ridesharing during the COVID-19 Pandemic

The COVID-19 pandemic highlighted certain risks in ridesharing, with driver income becoming a concern in the SEA countries. As a result of the pandemic, ridesharing was either restricted or demand went down. With this, ridesharing drivers experienced reduced income or stopped operation altogether. Government financial assistance was given to drivers to mitigate this loss, with ridesharing companies also providing financial assistance to their drivers [180,181,184].

Transmission risk of COVID-19 was also a salient concern due to the nature of ridesharing where different passengers are conveyed by drivers throughout the day. Initially, some governments required safety measures to be implemented such as wearing masks, requiring cashless payments, or limiting the number of passengers in a vehicle [182,186]. Ridesharing firms also provided guidance to its drivers to mitigate transmission risk, with ridesharing firms introducing measures to reduce transmission through the use of plastic barriers and requiring drivers and passengers to declare any symptoms of COVID-19 [185–187,189,190].

4.2. *The Governance of Ridesharing in SEA*

In the case of these five SEA countries, the issues in ridesharing were addressed through five of the six governance strategies [4,16] discussed in Section 2: namely, no-response strategy, prevention-oriented strategy, control-oriented strategy, toleration-oriented strategy, and adaptation-oriented strategy. With respect to COVID-19, precaution-oriented strategies were employed for ridesharing. The actions of each of the five countries are classified based on the five governance strategies in Table 3 below.

Table 3. Classification of governance strategies in five SEA countries.

Strategy	Malaysia	Indonesia	Philippines	Vietnam	Singapore
No-response	When ridesharing entered the market in Malaysia, Indonesia, Philippines, and Vietnam, their respective governments initially took no action on ridesharing. No regulatory framework was in place to specifically govern ridesharing at this time in these various countries.				No framework established, but Singapore was more willing to promote ridesharing as a transport alternative compared to other countries [4].
Prevention-oriented	Following a period of no enforcement action being taken, the Philippines, Indonesia, Malaysia, Vietnam all took action, either prohibiting ridesharing or apprehending drivers operating under the ridesharing applications on the ground that they failed to get proper government authorizations to operate as taxis or public service vehicles [69,113,136,160].				Singapore prohibited the establishment by Grab of a carpooling service between Singapore and Malaysia on the basis that the proposed arrangement was not permitted by Singaporean regulations [4].
Control-oriented	In Malaysia, amendments to the Land Public Transport Act required that ridesharing applications to provide the transport regulator the identification of their drivers and to allow criminal checks of potential drivers. The amendments also required health check-ups for drivers, vehicle roadworthiness inspections, and insurance coverage. Professional licenses were also required for drivers of ridesharing vehicles, similar to taxis [207].	In Indonesia, the transport ministry required roadworthiness tests to ensure that vehicles operating under ridesharing platforms were safe (respondents 1, 5, and 6). Floor and ceiling prices were also imposed to prevent predatory pricing that would harm the incumbent taxi industry and excessive prices that would harm consumers [193].	In the Philippines, its land transport regulatory body issued regulations that required the procurement of insurance for ridesharing vehicles, professional driving licenses for operators of ridesharing vehicles, and police background checks for drivers in order to regulate quality of the services provided by ridesharing platforms. Subsequently, fares of ridesharing services were subject to regulation by the land transport authority; further, ridesharing applications were required to have a minimum amount of Philippine equity to begin or continue operations in the country [74,200,208]	In Vietnam, ridesharing applications were allowed provisional licenses to operate on a trial scheme, with a view towards amending existing regulations that would allow ridesharing applications to operate in the country. This eventually resulted in regulations that provided that vehicles on ridesharing applications would have to be appropriately badged and labelled. There were also confidentiality obligations for passenger and driver data [180,209].	In Singapore, the parliament approved the Third-party Taxi Booking Service Providers Act that required registration of ridesharing providers with the Land Transport Authority. Further regulation came in the form of a required licensing framework for drivers of ridesharing vehicles [4]. New regulations announced in September 2020 required that drivers of ridesharing vehicles be Singaporean citizens and be 30 years old and above [106].

Table 3. Cont.

Strategy	Malaysia	Indonesia	Philippines	Vietnam	Singapore
Toleration-oriented	<p>In Malaysia, taxis were encouraged to adopt ridesharing applications in order to compete, with drivers finding increased income after using these applications. The transport ministry also relaxed taxi regulations in order to allow taxis to better compete with ridesharing services [153,210].</p>				<p>In Singapore, taxi industry regulations were revised to level the playing field with ridesharing services, removing regulations that required minimum distance travelled for taxis [4].</p>
Adaptation-oriented	<p>In Malaysia, the Ministry of Transport released a transport policy master plan from 2019 to 2030, providing for a comprehensive review of transport regulation, and to strengthen coordination between the transport sector and the various regulators involved in transport policy. The transport policy also provides for a regularly updated database to aid transport agencies in decision making [211].</p>		<p>In the Philippines, consultations are mandated to be held by the transport regulator in the event of an application for a price increase by ridesharing applications [212].</p>		<p>In Singapore, its government conducted consultations with various actors for the governance of ridesharing in Singapore. A committee was also established to review risks in ridesharing [4].</p>

5. Discussion

5.1. Discussion of Strategies across the SEA Countries

A cross-jurisdictional review of various regulations in Malaysia, Indonesia, the Philippines, Vietnam, and Singapore reveals that countries in Southeast Asia follow varied approaches in the governance of risks in ridesharing. A no-response approach was employed by the countries initially reviewed at the start of ridesharing; however, the motivations for doing so appear different. Singapore employed a no-response approach to allow the market to develop with the long-term view of promotion. Other countries, however, employed a no-response approach due to a void in regulation.

A prevention-oriented strategy was also employed by all countries; however, Malaysia, Indonesia, the Philippines, and Vietnam all employed this strategy for ridesharing as a whole, not just specific aspects of it. Ridesharing providers were prevented from continuing their operations, and drivers of ridesharing vehicles were apprehended by authorities. This was done on the basis that ridesharing did not fit into the existing public transport regime of each of these countries or that no prior authorizations were secured for their operation. Singapore, on the other hand, only employed a prevention-oriented strategy for one specific aspect of ridesharing—cross-border carpooling [4].

Control-oriented strategies were also employed by all countries. Following lack of regulations for a significant period, each of these countries either through legislation or through their respective land transport authorities promulgated regulations that would govern ridesharing. However, the countries vary in the nature and extent of such regulations. Malaysian authorities required professional licenses for drivers as well as criminal background checks, roadworthiness inspections for vehicles, and insurance coverage for vehicles. Indonesia issued similar regulations; however, in addition, a price ceiling and price floor were imposed by the transport ministry allegedly to prevent predatory pricing in the case of the price floor and to prevent price gouging in the case of the price ceiling. The Philippines issued similar guidelines to both countries, but the price was fixed to a definite flag-down fee, per kilometre charged, and per minute charged with a cap on surge pricing. Vietnam initially mandated a trial program for ridesharing apps before issuing regulations that required vehicles operating under ridesharing applications to be appropriately identified with badges and labels. In Singapore, driver registration as well as licensing were required.

It is noted that only Malaysia and Singapore appear to have employed toleration-oriented strategies. In both countries, toleration-oriented strategies were employed through their respective governments relaxing taxi regulations allowing them to compete with ridesharing providers. Additionally, in Malaysia, the government actively encouraged taxi drivers to make use of ridesharing applications.

With respect to adaptation-oriented strategies, Singapore employed this through the conduct of consultations with various government and non-government actors, as well as the establishment of a committee to review risks in ridesharing. Malaysia, on the other hand, published a transport policy master plan from 2019 to 2030 that provided for the creation of a regularly updated transport database to assist transport agencies in their decision making. In the Philippines, consultations are required before a regulator approves the price increase applications of ridesharing applications.

The identification of risks by respondents also varies per jurisdiction. In countries with existing data privacy frameworks such as Singapore and the Philippines, concerns surrounding data privacy and protection were different. In the Philippines, the concern was a matter of enforcement and compliance of companies with existing rules, that is, whether companies could be penalized or held to account if a data breach occurred. In Singapore, while there was a similar concern about the possibility of data breach, it was more due to the nature of the industry being data intensive rather than the ability to enforce compliance with orders of the data protection authority. Singapore also appeared less concerned with data being used for several purposes so long as the use remained internal within the company. It is noted that other countries with new or non-existent

data protection regulations were also concerned with the matter of ridesharing companies collecting significant data on their customers; however, there were more concerned with the passage of a data protection framework or the issuance of new regulations that would allow individuals to seek redress in case of data breaches or assert their rights to data. Other than this, the level of data protection across jurisdictions varied. Respondents from countries such as Indonesia and Vietnam that had new or inexistent data protection regimes were more concerned about the creation or development of a framework that would allow them to safeguard their data. The risk in these countries was the lack of a robust data protection framework that would allow them to seek protections.

The manners by which the countries regulated the ridesharing market after Grab's acquisition of Uber were also different. In Singapore, the competition authority imposed conditions prohibiting Grab—then, the remaining ridesharing firm in Singapore—from imposing exclusivity requirements on its drivers, thereby allowing potential entrants to attract drivers from Grab, which in fact did happen with the entry of Go-Jek in the market. This is as opposed to Malaysia where no review of Grab's acquisition of Uber occurred due to existing regulations. Due to this, authorities were unable to set conditions that would better allow entrants to easily contest Grab, which had become the dominant player. With this, Grab imposed restrictions on its drivers that prevented them from advertising other ridesharing players [213], allegedly making it difficult for existing and new players to gain a foothold in the Malaysian market.

Respondents from all countries except Singapore emphasized that one of the risks of ridesharing is the precarious position it puts drivers in. Respondents from the Philippines, Malaysia, Vietnam, and Indonesia all raised concerns that driver income from ridesharing was small considering that the ridesharing company took a significant part of the fare as commission. There was also a concern that drivers were not treated as employees and that the ridesharing companies treated drivers as merely independent contractors, not granting them benefits such as job security or insurance, benefits that would normally be available to employees. Respondents from Singapore were less concerned about driver income. The primary concern of respondent 7 was that with Singapore's thrust of developing human capital, individuals that would want to take ridesharing jobs would eventually decline, leading to a shortage of manpower.

5.2. Policy Recommendations

5.2.1. Unified Regulatory Approach

The experience of several of the SEA countries has been one of inconsistent regulation between different regulatory bodies that govern ridesharing. In Indonesia, for example, ridesharing was restricted by ministries but was eventually allowed by the president, with the lifting of the prohibition occurring shortly after the prohibition was announced [113,114]. Similarly, in the Philippines, the legislature contradicted transport regulators with regard to regulatory action on ridesharing [214]. Inconsistent policy signalling may result in regulatees being unable to adequately plan for long-term investments in novel technologies. Regulatees may also be compelled to exit countries with perceived regulatory uncertainty.

The lack of a unified approach in some SEA countries also made it difficult for governments to adequately govern ridesharing, resulting in poor compliance or non-compliance by regulatees. A unified regulatory approach across various governing bodies, with consistent policy approaches of regulators, encourages compliance of regulatees as well as provide potential entrants in the ridesharing market that they can have regulatory certainty.

5.2.2. Cross-Jurisdictional Cooperation

Certain aspects of governance do not only require a unified regulatory approach within a country but also the cooperation of various regulators across countries. The nature of ridesharing, being asset light and driven by novel technologies, means that it can operate in several places at a time with minimal capital. Due to this, regulators across the various

SEA countries had difficulty when Grab acquired the SEA business of Uber, with some countries unable to act or others being unable to prevent the transaction from occurring as these regulators only had authority within their jurisdiction, as could be seen with the limited enforcement action undertaken.

Similarly, cross-jurisdictional cooperation can be helpful in developing novel technologies. In the case of Singapore prohibiting the establishment by Grab of a carpooling service between Singapore and Malaysia, cooperation between these two jurisdictions could have resulted in the operation of a potentially beneficial service. As such, it is important that regulators across various countries cooperate in the governance of novel technologies—cross-jurisdictional cooperation, especially with transactions that affect the entire SEA region, can improve the governance of the risks of novel technologies.

5.2.3. Stakeholder Involvement in the Regulatory Process

Regulation of ridesharing in the countries reviewed appears to have mostly been a top-down approach, with regulators imposing requirements on ridesharing firms and drivers that operate on these platforms. At the same time, it should be noted that regulatees might also refuse to engage regulators, resulting in the formulation of policies that stifle the development of an emerging industry. Involvement of the ridesharing firms and other stakeholders such as drivers and riders in the regulatory process allows regulators to better understand the ridesharing industry and its needs. Regulators should also engage stakeholders affected by the disruption brought about by novel technologies. Engagement of these stakeholders increases their acceptance of new technologies. As was seen in the various SEA countries, failure to involve the taxi drivers and address their concerns resulted in protests and even direct action against ridesharing drivers.

To facilitate stakeholder involvement, regulators need to adopt adaptation-oriented strategies in the governance of risks of ridesharing. Malaysia and Singapore have integrated such strategies in their governance frameworks, with Malaysia regularly conducting data collection on transport and Singapore conducting consultations, as well as the establishment of committees to regularly review risks in ridesharing [4,211]. The institutionalization of such consultation and review mechanisms provides channels for stakeholders to participate in the governance of risks.

5.2.4. Regulatory Sandboxes

Creation of regulatory sandboxes might help regulators to better govern disruptive innovation such as ridesharing [215]. The creation of short-term regulations and trial periods for disruptive innovation allows governing entities to assist in the development of such innovations, control undesirable risks, and promote desirable benefits brought about by new technologies [216]. Regulatory sandboxes also allow regulators to understand how novel technologies influence incumbent industries, allowing regulators to adjust regulations for other industries that might be adversely affected by these new technologies. Liability and safety concerns as well as issues of data use and privacy can also be better addressed in the smaller scale environments of regulatory sandboxes. This, however, requires the cooperation and coordination of the various regulatory bodies that govern a particular industry or technology.

5.2.5. Proactive Governance

The experience of Singapore in the regulation of disruptive technologies and ridesharing in particular has shown that proactive governance allows cities to benefit from novel technologies while reducing its risks [4,215,217]. By taking a proactive approach to the governance of ridesharing, regulators can assist in the development of an industry that is inclusive and allows the integration of novel technologies into everyday use without undue disruption. Proactive governance also entails the distribution of the gains of new technologies to those who have been adversely affected by it, such as through support mechanisms such as skills retraining and development.

A proactive governance approach also prevents lack of competition and dominance of a single player that gains the advantage of network effects. By fostering industry growth, the threat of market entry of new players prevents existing players from gaining market dominance.

6. Conclusions

In this article, we reviewed the governance strategies employed by five SEA countries on ridesharing. Common themes across these five countries relate to the disruption of current industry, loss of employment, income loss, privacy, safety, and congestion. These risks are of particular concern for smart cities that push for the use of innovative technologies—risks that negatively impact various sectors should be adequately governed so as not to exclude people from the benefits of new technologies.

While not as salient a concern, revenue collection from ridesharing has also been discussed as a risk in Vietnam. Smart cities should develop the ability to adequately measure and collect tax revenue from new technologies. Revenue collected from ridesharing may be able to counteract negative impacts caused by this technology as well as subsidise other endeavours of smart cities in their pursuit of sustainability.

In the governance of ridesharing, participation of stakeholders is key. As evidenced by our case study, failure to involve stakeholders in the decision-making process results in the rejection of innovative technologies, with outright hostility in certain cases. The involvement of stakeholders results in their greater acceptance of these new technologies, allowing them to receive their benefits.

The cooperation of regulators within and across jurisdictions is also important for formulating consistent regulations that allow technologies to develop. As regulators often deal with different areas of risk, failure to coordinate with each other results in inconsistent regulation that may stifle the growth of new technologies or that inadequately manages the risks they bring about.

By taking the lead in regulating new technologies through regulatory sandboxes and proactive governance, smart cities can review the risks of new technologies before encouraging adoption in scale. Proactive governance strategies allow smart cities to anticipate and address risks so that they do not have an excessive adverse effect on the public. This also allows smart cities to deploy programs that distribute gains from new technologies to those that these technologies have adversely affected.

Future research can be conducted on cross-regional regulation of disruptive technologies such as ridesharing, comparing how other regions such as North America and Europe have governed the risks of ridesharing in their jurisdictions. An important point for further research is how the relationship between regulators and regulatees affects the governance of risks of novel technologies.

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