

## CASE STUDY

# Analyzing Singapore's ride-hailing regulation through its technocracy using social practice theory

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### ABSTRACT

Ride-hailing or private hire has taken the Singapore transport network by storm in the past few years. Singapore has had more than three revisions of its ride-hailing regulation in the six years since the arrival of the disruptive technology. Often quoted in the list of cities with commendable public transport policy, Singapore still manages to find a viable and significant position for ride-hailing. Cities from around the world are all searching for a model of regulation for ride-hailing that can be elevated as a benchmark. Singapore, to a large extent, has formulated a successful model based on current market parameters and, more importantly, an adaptive one that evolves constantly with the constantly disruptive technology. The experts and regulators of the Singapore transport sector were interviewed in depth, tapping into their opinions and technocratic commentaries on the city-state's Point-to-Point, or P2P, sector regulation. The data were analyzed using the three-element model of social practice theory as an alternative to conventional behavioral studies, thereby eliminating bias on the commuters and rather shifting focus to the practice. Content analysis utilizing QDA is executed for categorization through fine-level inductive matrix coding to elaborate upon the policy derivatives of the Singapore model. The unique addition of the research to ride-hailing policy is the comprehension of the commonalities and patterns across industrial and technological disruption, practice and policy irrespective of sectoral variations, thanks to the utilization of social practice theory. The first-of-its-kind policy exercise in the sector can be repeated for any city, which is a direct testament to the simplicity and exhaustivity of the methodology, benefiting both operators and investors through equitable policy formulation.

**Keywords:** *private hire; ride-hailing; transport policy; social practice theory; transport regulation*

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## 1. Introduction

Ride-hailing regulation is a relatively new field that has come into prominence only in the recent past. Although traditional policy buffs tend to rely upon taxi regulations and their derivatives as means of regulating the private hire or ride-hailing (used interchangeably in this document) industry, data from around the world allow an inference that stipulates the creation of a different entity called the Individual Public Transportation (IPT), or Point-to-Point (P2P) transport as it is called in

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Singapore, which encompasses ride-hailing and taxi together as one network. Singapore has recently enforced the third and most comprehensive regulation of the industry in the year 2021. In this study, P2P transport policy experts and stakeholders of the city-state presented their technocratic yet unorthodox views on the sector. The use of social practice theories (SPTs) to analyze and interpret transport policy is in its nascent stages in comparison with traditional behavioral theory approaches. Shove, Pantzar and Watson's three-element model (Shove et al., 2012), often cited as the most accessible representation of the field, allows a poignant analysis encompassing the delicate intricacies of policy framing in the sharing economy.

### **1.1. Validity of the research and contribution to ride-hailing regulation**

A city's infrastructure planning and evolution of transportation policy are important, but they are gauges for greater fundamental evolutionary processes. Cross-sectional research has fallen short in describing the socio-political and economic subtleties governing a city's developmental course. Similarly, traditional transport planning research, which focuses on similar mobility and user-behavior modeling, neglects the ancillary options of aligning the physical development of cities with infrastructure changes and reinforces existing travel patterns.

The unique addition of the research to ride-hailing policy is the comprehension of the commonalities and patterns across industrial and technological disruption, practice and policy irrespective of sectoral variations, thanks to the utilization of social practice theory.

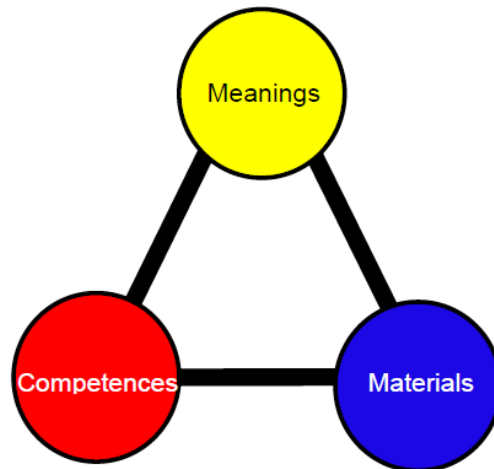
The documented policy exercise can be repeated for any city, which is a direct testament to the simplicity and exhaustivity of the methodology, benefiting both operators and investors through equitable policy formulation.

Cities around the world are all searching for a model of regulation for ride-hailing that can be elevated as a benchmark. Singapore, to a large extent, has formulated a successful model based on current market parameters and, more importantly, an adaptive one that evolves constantly with the constantly disruptive technology.

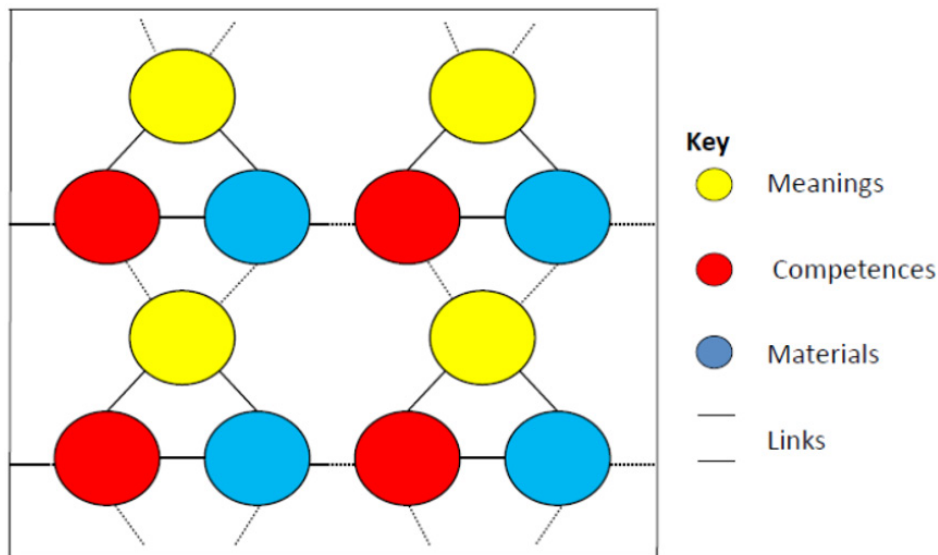
## **2. Review of literature**

In comparison with psychological theory approaches, SPT prioritizes the "practice" of alienating bias on the individual executioner of the prescribed action. Metcalfe and Dolan (2012) aptly summarized behavioral economics as a mode that allows the juxtaposition of psychological inferences and economics. However, mobility and travel choices are often underexplained by behavioral economic models, as they fail to account for the bias in the travelers' attitude towards the mode choice, since physical infrastructure for mobility has been traditionally centered around private travel by personal cars.

Cairns et al. (2014) explained that the research gap faced in traditional social theory usage in transport research owes to findings often validated by theory-constructive qualitative analysis and seldomly validated by applying empirical techniques. The three-element model of materials, meanings and competences (**Figure 1**) explores the dynamic interaction of the elements cultivating practices of mobility. The method is superior to traditional psychology-based approaches, as it considers the influences on the practices of mobility (via ride-hailing and other modes) and



**Figure 1.** The three-element model



**Figure 2.** Complexes of practices

recognizes the structures and processes that impact the movement of people.

Ajzen's theory of planned behavior (Ajzen, 2012) explores the personal choice or objective of task execution and instructs that a stronger intent results in a greater likelihood for the happening of the task. The likelihood of changing such behavior varies in direct proportion to the degree of control the practitioner has on the externalities. Higher control enables higher predictability. Giddens' structuration theory distances from societal functions and focuses on structures, stating that the central pillar of structures in social theory is "the structuring of properties allowing the 'binding' of time-space in social systems" (Giddens, 1984, p. 17). At the moment, there is an absence of a single unified theory of practices.

The three-element model builds upon the structuration theory by incorporating the ambiguity of human actions and the external systems that influence them (Shove et al., 2012). The intersection of elements is what results from the formation of a practice, as seen in **Figure 2**. A practice evolves or forms anew with breakages and linkages in the elements. Policy interferences must be made at the

points of breakage and formation for maximum efficacy. The creation of opportunity change must be ensured through regulatory interference at element breakage.

Clewlow and Mishra (2017) utilized an online survey platform to collect population, transport and housing data detailing the attitude to travel, demographics, decision rationale, travel behavior encapsulation, vehicle ownership and other life stage events of a survey population in five U.S. cities. However, the study fell short in focusing upon the influence of ride-hailing on traffic networks, emissions and other peripherals so that regulatory and planning reforms could be postulated.

Palliyani and Lee (2017) expand upon Singapore's transportation policy through its history since independence, and mention a culture of infrastructure favoring personal car transport over mass transit. Although the study largely covered mass public transportation, the idea of the mismatch between physical infrastructure provision and transportation policy to encourage mass transit, strikes a valuable note regarding the ecosystem provided for the success of ride-hailing.

Williams (2014) utilized the application of social practice theory to analyze the English system of transportation planning, which was centered around behavioral economics models, augmenting the process with a Systems of Provision addendum to comprehend the evolution within the process. Content analysis of expert interviews with transport professionals in the industry from local and governmental bodies allowed the isolation of the policy action gaps in the English transport planning system, which was elaborated upon by the elucidation of the complexes of practices from the three-element model. The same methodology was used to analyze the expert interview data in this study to examine the ride-hailing policy in Singapore.

### **3. Methodology**

#### **3.1. Expert interviews**

A set of experts was identified from the fields of Government, Operator, Academia, Regulator and Planner. The interviews were completely anonymous and all personal identifiers/information was struck out from the data. The ordinance of the Personal Data Protection Act (PDPA) was strictly observed. The data collected were the transcripts from the interviews with the experts in the industry.

Seventy-one invitations were sent out, as a total of 71 candidates were identified matching the selection criteria. But only a mere 15 agreed to be interviewed. A total of 15 interviews were conducted face-to-face from 19th July, 2018 to 27th August, 2018. Face-to-face interviews allow for the interpretation of both linguistic and non-verbal discourses on a discussion.

The organizations included:

- 1) The Land Transport Authority (LTA), Singapore's transportation sector regulator.
- 2) Grab and MVL (now TADA), Singapore's two ride-hailing operators. Gojek had not launched in the city at the time.
- 3) The National University of Singapore (NUS), Nanyang Technological University (NTU) and Singapore University of Social Sciences (SUSS).

- 4) The Urban Redevelopment Authority (URA), Singapore's urban planning authority.
- 5) The Competition and Consumer Commission of Singapore (CCCS), Singapore's competition watchdog.

The interview was broadly classified into five sections:

- 1) Section 1: The expert's experience and background in the industry to establish credibility.
- 2) Section 2: Preliminary research questions based on the regulation for ride-hailing and regulations around the world.
- 3) Section 3: Emission guidelines, economic theories and taxi competition.
- 4) Section 4: Pricing, subsidies and other financial regulations.
- 5) Section 5: The respondent's best course of action from a holistic perspective and a check of knowledge on social practice theories.

All transcripts were anonymized to protect the privacy of the experts and, as such, they were given unique identifiers known only to the researchers. The audio recordings were destroyed, as per agreement with the participants, and the transcripts were retained. The transcripts shall be destroyed after six months of publication, as agreed.

Shove, Pantzar and Watson (2012) break a social practice into three core elements in the three-element model, as shown in Figure 1:

- 1) Materials: Including things, technologies, tangible physical entities and the stuff of which objects are made.
- 2) Meanings: Including symbolic meanings, ideas and aspirations.
- 3) Competences: Encompassing skill, know-how and technique.

The evolution of these elements is based on the following rules:

- 1) Materials are the only element that can move physically.
- 2) Materials have physical characteristics (mass, durability, etc.) that can be at times be transformed during processes, such as transportation.
- 3) For all three elements, the extent and rate of circulation vary with the presence and absence of the infrastructures of transport.
- 4) Materials, unlike competences and meanings, are free from codification and de-codification.
- 5) Competences can only be transformed if there exists a prior form of base competence.
- 6) Meanings evolve faster than competences, as skill acquisition takes time.
- 7) The evolution of one element is dormant, in effect, until the other two join in the practice.

The interview data were coded and analyzed using the abovementioned rules to develop policy derivatives from the content.

### **3.2. Content analysis**

Content analysis is a means of quantifying text-based data into pre-determined categories systematically. It facilitates the quantification of qualitative data. Codification of content allows the pinpointing of areas of significance and categorization of results and encapsulates them within the

identified themes. QDA was the platform used to input the codes and perform the iterative coding. The coding process itself involved a thematic three-staged process. A top-down coding approach selectively categorized on a thematic basis was executed. Inductive coding was the primary mode of data classification and categorization, supported by constant comparison, evaluation and interpretation. To allow comparison across themes, a cross-case synthesis based on a compare-and-contrast exercise then led to conceptual generalizations based on pattern matching.

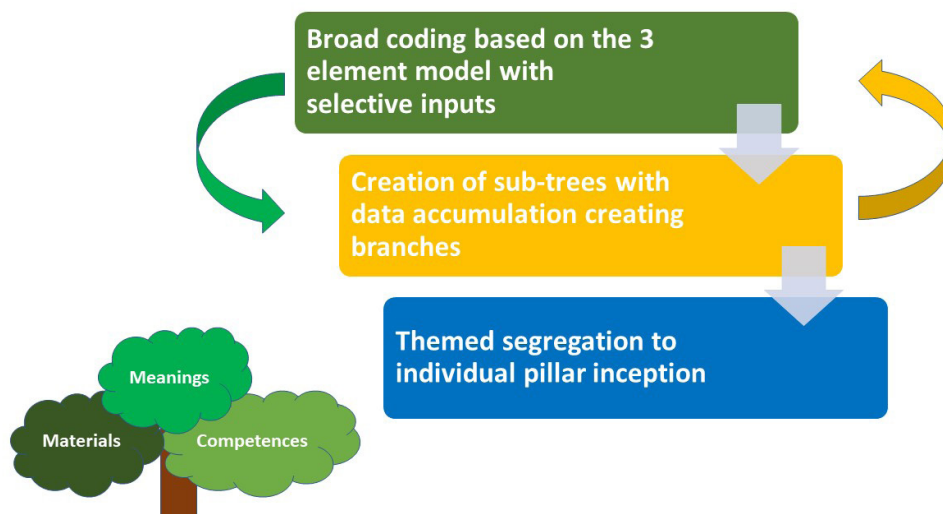
In the first stage, coding was performed for each individual question under the three broad themes of materials, meanings and competences. Under the broad themes, codes were selectively input for each individual theme, e.g., provision of infrastructure under materials. Succeeding each successful iteration, sub-trees of codes based on larger data accumulation were formed with the final question, giving us the largest set of coded branches and trees.

In the second stage, the coding process was reiterated from Question 1 all the way till the last question, so that the repetitive iteration process would assimilate even more code mentions. In the final stage, they were analyzed in a completely different manner, separating them based on themes with a separate coded tree for materials, meanings and competences.

The three-step coding was used to allow the data to be introspected from the categorization, as shown in **Figure 3**. The data from the interview were transferred to Excel software for initial analysis. The data were checked for errors and a coding scheme was created to allow the appropriate data to be input into the software package.

Qualitative coding could involve two approaches: broad-brush coding and fine-level coding (Erasmus and Schenk, 2008). Broad-brush coding captures stories or exchanges between groups and is effective for analyzing group discussion transcripts. Fine-level coding analyses line-by-line responses and presents a supremely high level of details. Fine-level coding was utilized in the research in combination with matrix coding, which compared data based on a set of attributes.

Initial categories/themes were created, followed by the trees/nodes underneath. In addition, subsets called child nodes were also created as sub-nodes.



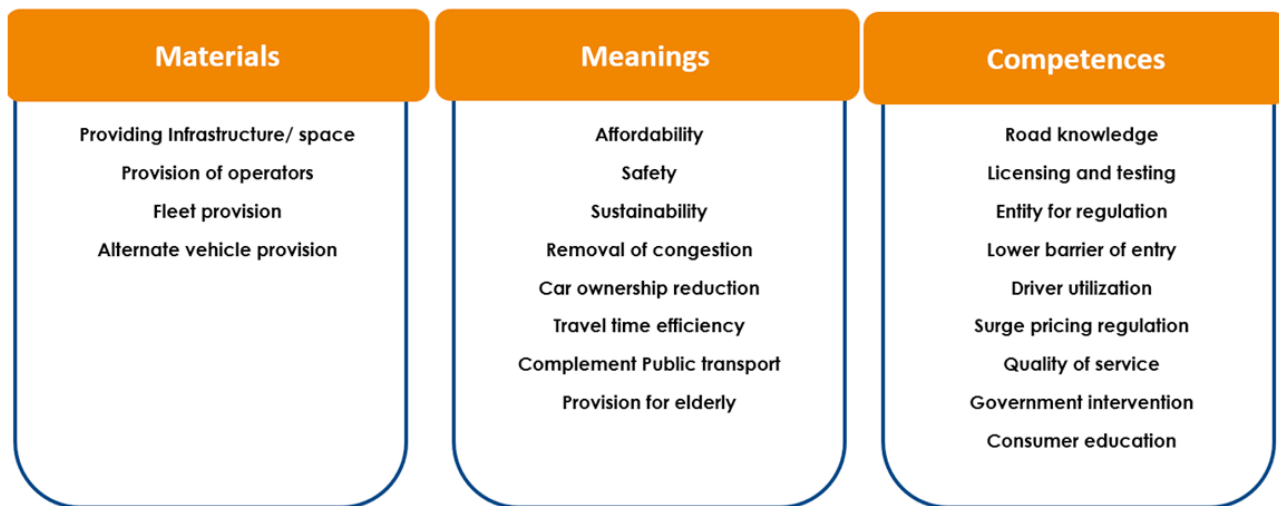
**Figure 3.** Coding algorithm



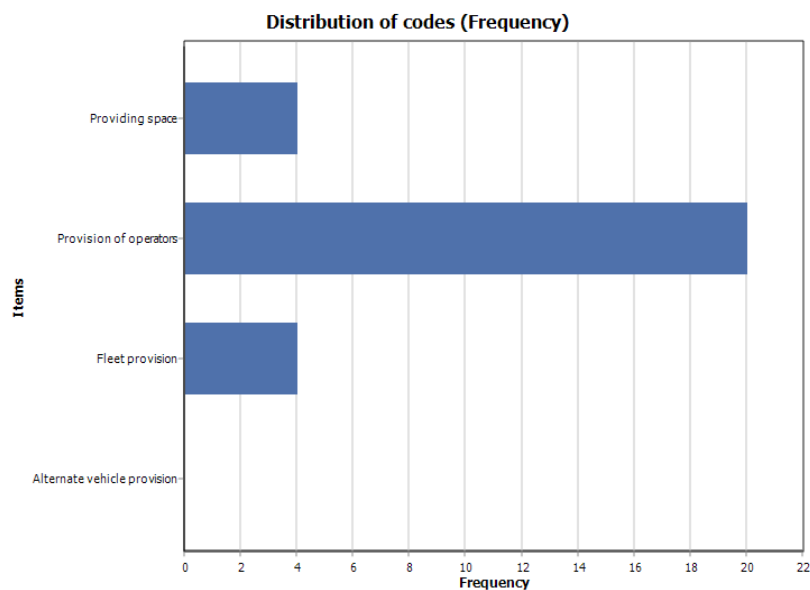
## 4. Findings

The three themes of materials, meanings and competences were classified, and underneath them sub-nodes were coded, which are listed in **Figure 4**.

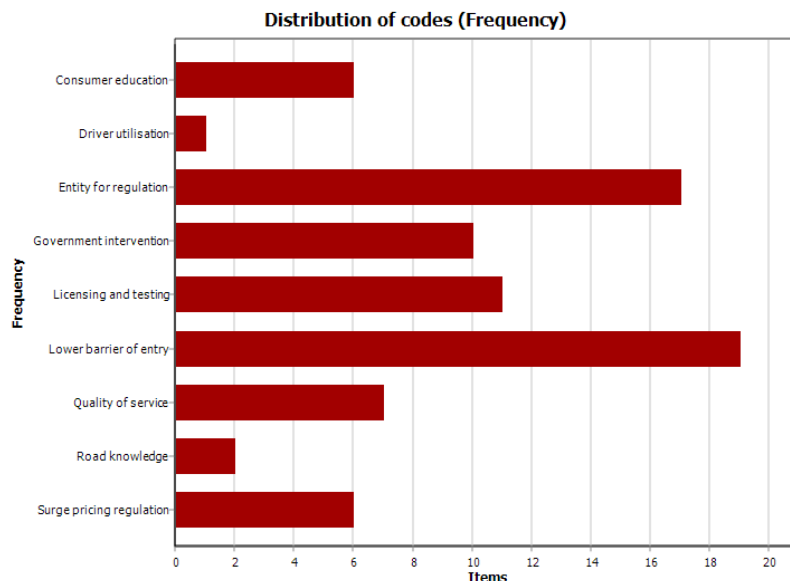
Firstly, under materials, it is observed that the code with the highest frequency is the provision of operators, which encourages the increase of competition (**Figure 5**). The code identified a tree match for successive iterations for symbiosis between lowering the barrier of entry and allowing the ease of business, thus presenting the experts' opinion of increased regulated competition. Other subsets of child nodes that matched in multiple iterations were fleet provision for new operators and infrastructure provision. The conclusive opinion that the guidelines must protect new and small players to come into the market was almost a unanimous code mention, with the caveat that the government must undertake responsibility. A consensus was relayed that the standard of public transport in terms of infrastructure, connectivity and comfort is well established.



**Figure 4.** Nodes and themes coded



**Figure 5.** Frequency analysis for the theme of materials



**Figure 6.** Frequency analysis for the theme of competence

A significant singular code mention is that transport policies should not penalize good business practices, so that private hire should enjoy the benefits. Small players entering the sector would find it challenging to penetrate the market, so the iteration had entries in the sub-nodes for the establishment of a competitive pricing strategy to gain a consumer base. A suggested cost of equalizing the advantage, that was repeated in two themes, was to handicap the platform, which would in turn affect the quality of service, or a cost on the regulator itself to stimulate the quality of the competitor that does not have the experience.

Competences included the largest number of sub-nodes. As in the case of materials, lowering the barrier of entry for new players placed as the highest precedence amongst the codes (**Figure 6**). There were repetitive interactions among the sub-nodes regarding leniency in licensing and testing, with an expert quoting that half of the vocational license holders did not bother to renew their license. The rights of the commuters were also not expressly communicated for ride-hail users, and lines particularly coded under the statutory boards suggested that governmental intervention in this aspect would be fruitful.

Equity concerns on taxi training and associated tenuity levels were coded. For example, Taxi Driver Vocational License (TDVL) applicants are to memorize the routes from point A to B, i.e., which route is optimal and what the alternatives routes are for a situation, whereas ride-hail drivers do not face such rigorous testing. In contrast, Private Hire Driver's Vocational License (PDVL) applicants have the prerequisite of possessing a driver's license and are required to answer a few customer-service-related questions. The codes indicated a consensus that it is a less rigorous version of the TDVL. The taxi and private hire arms registered similar code mentions under materials, but there were diversions under the themes of competences and materials.

Emission concerns, as well as road usage, were coded under the competence theme. Greater vehicle kilometrage implies greater decay on roads and hence higher emissions and higher taxations. Equity concerns over private car owners with higher vehicle kilometrage and private hire drivers with lower kilometrage were coded. It relayed a priority of flexibility with equitable taxation. It



indicated that it would be unfair to every private hire driver who does not drive much and that regular drivers who drive a lot would also get away with it.

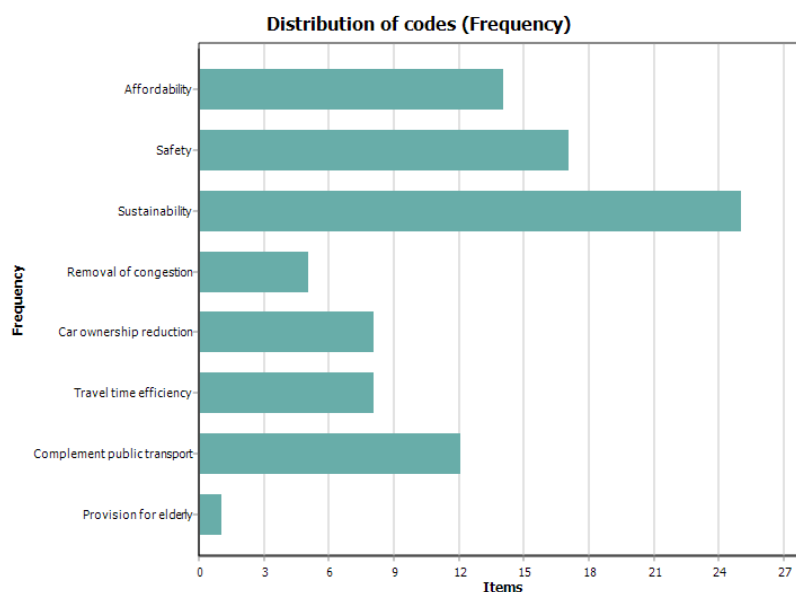
The code mention of the opposition to the exclusivity clause was widespread in more than one theme. Competition is always preferable and allows fiscal sustainability in the sector. Cannibalizing the taxi service is not a concern so long as there is regulatory clarification. There was an intersection between sub-nodes under competences that government involvement and its investment is a concern. But to free up the market, once regulations are in place, competition should be allowed to create a substantial effect. There are multiple mentions of criticism and acceptance that platforms do not know if their drivers work full-time or part-time.

Ride-hailing platforms were also accused by multiple experts of marking up operating costs, and the experts opined for annual or bi-annual audits by a competent authority. Lesser commission rates could be charged. Inordinate markup over operating costs would justify reducing revenue proportion shared with drivers.

The code for dynamic pricing strategies and its effect on multiple facets, such as taxi adaptability with respect to private hire, was identified as a child node under taxi policy segregation. As fair business practices, this parameter should be regulated and made consistent across the private hire and taxi systems.

Economy of experience by dominant players was coded under resource symbiosis, which promotes consumer welfare. It implied that as platforms mature, it will translate to a better ecosystem, thus providing more avenues of revenue for the company and better service provision for the consumers. Commuter education was the last sub-node coded under competences, with added weightage on governmental interference.

Meanings are harder to code. In line with Singapore's car-lite vision, sustainability has the highest frequency (**Figure 7**). Safety was a major concern among the respondents, with distinct emphasis upon the flexible nature of ride-hailing coded in multiple sub-nodes. Insurance concerns



**Figure 7.** Frequency analysis for the theme of meanings

were next coded. The codes indicated opinions that it was unlikely that car ownership would be reduced, as the draconian structure of Singapore's vehicle control is felt to be the harshest it can be. Affordability and symbiosis with public transport intersected over three trees with child node juxtaposition.

The codes reiterated that more competition would normalize the market, and hence the barrier of entry needs to be lowered. The codes relayed suggestions that the regulators investigate a cap for the hours the drivers put on the roads.

In terms of sustainability, the current emission scheme is based on vehicle engine capacity. Bigger-engine-capacity vehicles travel more, so their owners are required to pay more. Mileage was coded as a better alternative to the current scheme.

Private hire is seen as an excellent in-between job by the government for its employment market, with a regulatory expert opining that it should be a transient workforce.

## **5. Discussion**

Private hire or ride-hailing, with the maturity of this sector, requires more infrastructure for its activity in the form of vehicle storage and other resources. Granted, the sharing economy overcomes such traditional constraints; however, it cannot be excluded that some level of infrastructure support is warranted. Addressal of the gaps in terms of providing greater comfort and the last mile was set forth as the proposition to help improve public transport usage. As per the experts' analysis, it is a major reason why most commuters use private hire. Reducing journey time is more holistic in filling the gaps in the Singapore system.

At the same time, if a platform provides a good service, the company should do well. Penalizing large platforms with the aberrant reasoning of equity is discouraged. As a platform, such as Grab, strengthens its market position as a dominant player, it will become increasingly tough for small players to enter. Options such as diversion of costs to the operators or regulators are not necessarily justified if it is experienced elsewhere, e.g., a foreign operator entering the market.

The experts' commentaries warranted a separate entity within the statutory board (the LTA) to regulate and oversee the private hire arm and the experts opined that there must be better government intervention and forecasting of worst-case scenarios to avoid the Competition and Consumer Commission of Singapore (CCCS) fiasco, which was encountered in 2018 with Uber/Grab.

The experts also indicated that the vocational license exam is set at a reasonably competitive level and is not harsh on its testing standards.

Cross-regulation between taxi and ride-hailing was cited to be an impending necessity. Taxis and ride-hailing are similar in utility, but their meanings need to be redefined and differentiated. The concept of Individual Public Transportation, treating taxis and private hire arms as two sides of the same coin, was postulated as the ideal network solution. In Singapore, the terminology associated with the network is Point-to-Point, or P2P, transport.

A driver of a private hire car that is driven all the time pays a higher emission tax, but the scheme

should not be discriminatory against private hire vehicles. The point is that not all private hire cars are driven at a higher rate than regular vehicles. Private hire drivers have flexibility: they could drive an hour or eighty hours a week. Checking odometer readings annually at vehicle check-ups, multiplied by the car's fuel efficiency and accordingly calculating tax for that year, was suggested by one of the experts as a better practice.

As a dominant player, Grab would enjoy the economy of experience because establishing a company from scratch in Singapore is tough. For example, Gojek arrived later in Singapore. It was strenuous for Gojek to find its own fleet of vehicles, which was a big challenge for Grab and Uber when they first started. So, there is a big barrier of entry to those who want to come into Singapore market. But once the exclusivity clause is removed, they could tap on existing drivers, equalizing the advantage of the LTA bringing in one of the regulatory agencies to oversee the industry.

Accusations by the experts that platforms mark up operating costs to justify higher commission rates were followed by suggestions for annual or biannual audits by competent authorities for accountability. The experts recommended going as low as 8% for platform commissions, at which the platforms still profit.

Dynamic pricing strategies should be subjected to some level of regulation; however, in its absence, taxi companies will have to make a change and rise to the occasion to adapt and survive. Dynamic pricing would incentivize public transport patronage during peak hours. In the current system, any payment on private transport translates as an external cost to other users. As the roads become more congested, it transforms into higher fuel costs and higher parking fees. Dynamic pricing is a disincentive for private hire during peak hours.

Being in the market longer does give the economy of experience (Button, 1988). Dominant players understand consumers' behavior. Grab has branched out to other services and businesses, such as food delivery, financial services and even autonomous vehicles, thus evolving beyond its core business. Economy of experience allows scaling up in terms of accelerated service provision and demand management. Having a good understanding of the business and the gaps will help a company scale up. It also translates into benefits for commuters.

Commuters, as users of the system, need to be aware and educated of their rights. The experts identified the government as the empowered stakeholder that could facilitate the notion. Also, it was conveyed that environmental sustainability simply on its own is insufficient, and economic sustainability is paramount to ensure a thriving private hire sector. In addition, the experts felt that certain drivers tend to drive exhaustingly long hours, jeopardizing the safety of passengers, with no policy regulation that stipulated working hour caps.

Most respondents also agreed that congestion assuagement is not an outcome of ride-hailing intervention but a fruitful coincidence of parallel transport regulation. Furthermore, as electronic road pricing (ERP) rates remain almost the same since 2015–18, the situation has not exacerbated either. The experts opined that regulatory guidelines amend the role of ride-hailing in Singapore's land transport system to one that complements the bus and rail networks and is affordable.

During the pre-Uber-Grab merger era, heavily discounted trips were ubiquitous on most platforms. Competitive private subsidies such as these enabled a situation where it was cheaper than taking public transport, causing an abnormal surge in trips. Ride-hailing disruption has created new

areas that were non-existent. A respondent noted that in the traditional model, the fare is regulated by taxi meters. In ride-hailing, the handphone is the meter. The fare is calculated disruptively. There are different payment methods, which provide commuters greater freedom of choice, thus delivering a traditional service at a lower cost. After the merger, Grab increased its prices, as noted by the CCCS, to more competitive and consistent pricing, creating a more economically sustainable model.

Surge pricing was stated as a commercial decision and the respondents opined that it should not be regulated, with the caveat to avoid unfair surge. If any single dominant player has unreasonable surges, smaller players will take over, thus allowing the market to adjust itself to equilibrium.

Comparing taxi and ride-hailing, the latter has more mileage, and its longer hours on the roads could be a potential risk to passengers and pedestrians alike. The competent responsible authority was quoted to be the Ministry of Manpower and that the body should help in providing guidelines on driving caps and driver welfare.

The transient nature of ride-hailing should be translated as an advantage in providing employment for people who require flexibility or temporary employment. Regulation should be focused on protecting disruptive advantages over traditional protections.

## **6. Conclusion**

Singapore's P2P regulation is commendable, as it has evolved with the changing landscape of the sharing economy. However, it falls short in the pace of amendment, as the inordinate funding allocation to the industry fast outpaces regulatory interference. The paradox of over-reporting complaints over compliments, as in the case of any survey, is relevant in the exercise, as the experts tended to focus upon the shortcomings over the positives. Using social practice theory enabled the isolation of pertinent parameters under each regulatory theme, even providing an explanation as to how the elements overlapped and interacted with each other. It reinforced the notion that regulation is not a solitary execution and requires symbiotic association across multiple themes. Singapore has come a long way in terms of regulation for private hire, yet it remains to be seen how the island city-state's approach to the concept of Individual Public Transportation will churn subsequent regulatory revisions to finally materialize its car-lite vision.

As a testament to the city's model of regulation in the sector, albeit an exhausted adage, we quote Darwin: "It is not the strongest species that survive, nor the most intelligent, but the ones most responsive to change."

## **References**

- Ajzen I (2012). "Theory of planned behaviour". In: Van Lange PAM, Kruglanski AW and Higgins ET (eds.), *Handbook of Theories of Social Psychology, Volume 1*, pp. 438–504. London, UK: SAGE Publications.
- Button K (1988). *Contestability in the UK Bus Industry, Experience Goods and Economies of Experience*. Brookfield, VT, USA: Avery Publishing.
- Cairns S, Harmera C, Hopkin J and Skippon S (2014). "Sociological perspectives on travel and mobilities: A review". *Transportation Research Part A: Policy and Practice*, 63: 107–117. <https://doi.org/10.1016/j.tra.2014.01.010>
- Clewlou RR and Mishra GS (2017). "Disruptive transportation: The adoption, utilization, and impacts of

- ride hailing in the United States”. *Research Report UCD-ITS-RR-17-07*. Davis, CA, USA: Institute of Transportation Studies, University of California, Davis.
- Erasmus B and Schenk H (2008). *South African Human Resource Management: Theory & Practice. 4th Edition*. Cape Town, South Africa: Juta & Co.
- Giddens A (1984). *The Constitution of Society: Outline of the Theory of Structuration. 1st Edition*. Oxford, UK: Polity Press.
- Metcalf R and Dolan P (2012). “Behavioural economics and its implications for transport”. *Journal of Transport Geography*, 24: 503–511. <https://doi.org/10.1016/j.jtrangeo.2012.01.019>
- Palliyani, S. and D.H. Lee (2017). “Sustainable transport policy—An evaluation of Singapore’s past, present and future.” *Journal of Infrastructure Policy and Development* 1(1).
- Shove E, Pantzar M and Watson M (2012). *The Dynamics of Social Practice: Everyday Life and How It Changes*. London, UK: SAGE Publications. <https://doi.org/10.4135/9781446250655>
- Williams D (2014). *Social Practice Theory and Sustainable Mobility: An Analysis of the English Local Transport Planning as a System of Provision*. Doctoral thesis. Bristol, UK: University of the West of England.