Platform Playbook: A Typology of Consumer Strategies against Algorithmic Control in Digital Platforms

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Word count: 7,994 (including table and references)

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Abstract

Digital Platforms consist of algorithms and rules that shape consumer behaviour. When faced with these embodiments of the platform's interests, how do consumers protect their own interests? Through multi-method, qualitative fieldwork focused on commuters using ride-hailing platforms in Metro Manila, this paper shows that consumers develop strategies to achieve better terms for themselves. This paper contributes to the literature on algorithmic control and user agency in two ways. First, it proposes a fine-grained typology of consumer strategies in algorithmic digital platforms, consisting of 5 major types and 18 sub-types. Second, the typology sheds light on the distinct characteristics of consumer strategies and their implications. Future studies into user strategies and algorithmic systems, and digital platforms will benefit from the typology and implications laid out here.

Keywords: algorithms; user agency; digital platform; user strategies; consumer strategies

Word count: 7,039 (7,994 with references)

Introduction

As technologically proficient match-makers between suppliers and consumers, digital platforms such as AirBnb, Uber and Upwork wield various algorithmic systems and explicit rules that encourage user adoption, reliance and rule compliance (Rosenblat & Stark, 2016). When faced with these systems and rules, how are consumers on digital platforms able to

assert their interests in daily life – and with what implications on our understanding of consumer agency in digital platforms?

Scholars have paid increasing attention to the strategies of the platform's supply-side actors, such as gig workers on Upwork and drivers on Uber (Anwar & Graham, 2019; Jarrahi et al., 2019; A. J. Wood et al., 2018). However, there is much less attention to the strategies demand-side consumers employ to assert their interests. Our current understanding of supply-side strategies may not accurately capture consumer strategies because these two sides are sufficiently different. Just to give some key examples, workers may have less propensity to bend platform rules, lest they risk penalties from the platform and lose their income. Consumers cannot be expected to behave similarly. Moreover, consumers gain leverage simply by being the revenue source of both platform and supply side, and thus exercise agency in distinct ways.

Understanding demand-side user agency is important since consumers constitute a large part of the digital economy. Studies into consumer strategies can shed light on how consumers resist platforms' techniques of control, and provide a useful framework on how platforms can be constrained in the service of legitimate consumer interests. Likewise, studies on consumer strategies also help assess whether demand-side actors impinge on legitimate interests of the platform company and the supply-side workers. To this end, I employed a multi-method, qualitative approach including in-depth interviews and direct participation in the ride-hailing platforms of Metro Manila. This paper contributes to the literature on platform control and user agency in two ways: First, it proposes a fine-grained typology of strategies consumers that assert their interests in digital platforms. Second, it analyses these

strategies to differentiate consumer agency from worker and prosumer agency, characterise the role of social interactions in consumer strategy, and ponder the implications of consumer strategies on workers and the platform's interests.

Literature Review: Algorithms, Control and Agency in Digital Platforms

Digital Platforms and Forms of Control

A digital platform is an information-technology system that facilitates innovation, or intermediates a market with network effects (Cusumano et al., 2019). Most platforms that involve individual consumers such as Amazon, Upwork, Uber, and AirBnb, have been classified by Cusumano et al (2019) as digital transaction platforms, which are technologies that facilitate exchange or transactions between consumers and the supply-side (Cusumano et al., 2019). The platform entity creates the rules governing technology use and the behaviour of participants on the platform. However, the literature has cautioned that rather than perform as neutral arbiters, platform entities push their own interests through two main modes of control.

First, digital platform entities introduce a formal system of rules through algorithmic control, which is the automated, data-driven means of governance, oversight, and punishment of both supply and demand sides effected through the software (Cotter, 2019; Möhlmann & Zalmanson, 2017). According to scholars on the sharing economy and algorithmic management, algorithmic control can manifest as automated systems that match demand and supply (Murillo et al., 2017), determine prices (Gupta et al., 2018), aggregate the supply

side's performance metrics (Basukie et al., 2020; Lee et al., 2015), calculate rating scores (Basukie et al., 2020), employ gamification to motivate platform participation (Sun, 2019), deploy recommender systems to stimulate consumer demand (Gal & Elkin-Koren, 2016), and impose automatic penalties (Möhlmann & Zalmanson, 2017).

Second, platform entities also exercise managerial control, through techniques of control, design interfaces, or norms that may be partly deployed through the algorithm, but are neither completely executable nor policed by it (Jarrahi et al., 2019). Examples of semi-algorithmic managerial techniques include the part of the ratings and reputation systems which require inputs from human clients (Newlands, 2020); as well as policies on the terms of use and the non-circumvention of the platform. Platform entities also shape user behaviour through surveillance and pushing particular norms among users. For example, some gig work platforms have time trackers to bind workers to a certain number of work-hours, and communication systems designed to render interactions between gig workers and clients as impersonal as possible to prevent circumvention of the platform (Jarrahi et al., 2019). Combining algorithmic control and semi-algorithmic managerial techniques give rise to what Jarrahi et al (20019) call "platformic control". Hence, platforms can be conceived as a system of formal policies, informal nudges toward particular norms (Just & Latzer, 2017), and algorithmically enforced rules that help the platform company achieve user reliance and rule compliance.

Variations in Platformic Control

The forms platformic control take may vary depending on the type of digital platform. This topic can be fully examined in another paper, but a few examples are worth mentioning. Surveillance by the platform has often been observed in online labour platforms such as Upwork to discourage workers on hourly contracts from shirking (Jarrahi et al., 2019; Lehdonvirta, 2018). In contrast, platforms with service-oriented, on-demand models such as ride-hailing and food delivery arguably have less need for this since the transaction's success hinges on task completion rather than adherence to agreed work hours. Although these platforms may not practice direct surveillance seen in online labour platforms, they still gather data on behaviours of participants to refine recommender algorithms, or to gamify the experience of the supply side.

Moreover, while there are platforms that algorithmically determine prices such as Uber, there are platforms like AirBnb that allow the supply side to set prices. However, this does not mean that AirBnb has no platformic levers to influence price determination, pricing mix and the credibility of prices on the platform. They employ gamified structures for property-owners (Super Host status), optional algorithmic pricing (Smart Price), and affordances in the listing interface that help the hosts justify their prices to consumers (Lladós-Masllorens et al., 2020; Tong & Gunter, 2020).

These examples show that differences in platformic control are often not absolutes, but are degrees in a spectrum, as in the aforementioned use of surveillance; or, as shown by the example on price determination, are variations in techniques that target similar ends. Consequently, while we need to consider variations among platforms, the considerable

degree of similarity and versatility in their use of platformic control means that studying user agency in a specific domain can bring insights applicable to many other digital platforms.

Agency Versus Forms of Control in the Platform

Despite the power and versatility of platformic control techniques to shape user behaviour, individual actors have been conceived in the literature as able to exercise agency (van Dijck, 2009). Bakardjieva (2005, p. 30) defines agency as people's contingent actions to specific encounters between technology and typical human projects arising in typical situations. This formulation around contingent actions and "human projects" highlight instrumental strategies and self-interest as important aspects of agency. Reflecting the importance placed on practical strategies that further user's interests in some way, the digital platform literature has explored how users wield agency to offset the constraints imposed by the systems of control pervading the platform. More specifically, users devise strategies to use the platform's features in creative ways, influence how rules are enforced, and undermine the natural advantage of the platforms.

To a considerable degree, empirical studies on user agency and strategic behavior against algorithmic digital platforms pertain to workers and service providers. Worker strategies generally revolve around guessing how the algorithm works, resisting the demands of platforms and consumers, multi-homing to other platforms, and gaming the platform through loopholes (Möhlmann & Zalmanson, 2017). gig workers on Upwork develop strategies to bypass non-circumvention policies. They also assemble substitutes for Upwork's auxiliary technologies to limit the surveillance and imposition of platform rules (Jarrahi et al., 2019).

Platform workers gain experience in the platform, they begin to form folk theories on how opaque algorithms work (DeVito et al., 2018), use bespoke software (Lehdonvirta, 2018), create communities for learning and sharing workarounds (A. J. Wood et al., 2018), and develop intuition on their clients' strategies (Shapiro, 2017, p. 2965). Workers with weak bargaining power against the platform company are still able to exhibit actions of resilience, reworking and resistance on and off the platform (Anwar & Graham, 2019). In addition, several scholars detail how workers can employ collective mobilization to improve the terms they get from the platform (Tassinari & Maccarrone, 2017; A. Wood & Lehdonvirta, 2019).

Understanding Demand-Side Agency on Digital Platforms

As evidenced above, scholarship on user agency in platforms largely pertains to the supply-side such as gig workers on Upwork or service providers on Uber, rather than on the demand-side such as platform consumers. However, supply-side and demand-side agency may be sufficiently different such that concepts on the former may not always apply to the latter. First, platforms can function as a significant source of income for supply-side actors, limiting their ability and motivation to play loosely with platform rules and risk penalties or account deactivation. But consumers do not face such income risks when they play loosely with platform rules and experiment ways to outsmart the system.

Second, worker strategies include self-organising into collectives (Wood & Lehdonvirta, 2019) or even mobilising into unions (Walker, 2020), in hopes of attaining better terms from the platform. In contrast, demand-side users of many platforms are dispersed, individual consumers who simply use platforms as ways to address the highly individualised

contingences of daily life. These individual consumers have much less incentives to exercise agency through collective efforts like the supply-side do (Culpepper & Thelen, 2020, p. 303). Lastly, it is conceivable that individual consumers have developed strategies that leverage on their unique position as the primary revenue source in the platform ecosystem. Due to these fundamental differences, current literature on worker agency cannot adequately characterise consumer agency.

There have been studies directly related to the agency of demand-side actors, but these are often limited to the context of social media platforms. Users of social media platforms are often considered as "prosumers" because they both consume and produce content. Prosumers are known to execute several user strategies, such as forming "pods" where they contrive reciprocal engagements (Cotter, 2019), employ third party bots on social media (Petre et al., 2019), or form communities that exploit recommender algorithms (Bishop, 2019) – all to boost visibility and financial gain. However, literature on social media prosumers does not capture the reality of a wide class of digital transaction platforms. First, social media prosumers, by producing and partaking of media content, are simultaneously supply and demand, and thus they are a special case. Second, social media prosumers rarely give up something as material as money for vital services, the way consumers of transformative digital platforms like Uber, Deliveroo, Upwork, and AirBnb do. Hence, the stakes are lower for prosumers.

Third, the very sociality of social media platforms means that prosumers are strongly reliant on social interactions in ways that do not represent a broad class of digital platforms. And indeed, prosumer strategies that leverage social interactions – such as reciprocal "pods,"

"algorithmic gossip", and faked engagement – can be hypothesised as having limited applicability to how non-prosumer consumers exercise agency. Consider this: A prosumer such as a YouTube content creator needs subscriptions and engagement from other social actors to succeed, hence the need for reciprocal "pods" and strategies that require the leveraging of social relations. But a ride-hailing commuter or an Amazon shopper – who is a non-prosumer consumer – can successfully complete their transactions by just clicking buttons on the app, without once having to socialise with anyone. Due to these three differences, we need to look beyond social media prosumers to better understand individual consumer agency in non-prosumers platforms such as online labour, ride-hailing, e-commerce, food delivery, and fintech, among others.

There are few relevant studies that directly tackle, non-prosumer, demand-side agency against platform control. Gillespie (2017) highlights the case of an American activist manipulating the affordances in Google's search engine platform for a political purpose. Velkova and Kaun (2019) study the case of a Swedish design student who launched a campaign against racial bias in Google's search engine. These authors usefully remind us that individual activists can successfully force platform entities to change the rules. However, the activist is imbued with a sense of mission to change the platform's rules. In contrast, millions of demand-side users only interact with platforms as an instrument for carrying out their daily lives. Hence, there is a need to look beyond individual activism, and better apprehend how platform users resist, re-purpose and creatively assimilate algorithmic and platformic rules through the practices of daily life (Kitchin, 2017; Kubitschko, 2018). As Velkova and Kaun (2019, p. 2) themselves point out, user agency in platforms is still empirically and theoretically neglected.

Therefore, I address a specific puzzle in the literature: Looking beyond supply-side actors and the well-studied prosumers in social media platforms, how do platform consumers employ strategies against the platform's means of control to assert their agency and interests? This paper aspires to surface a fuller picture of strategies available to consumers, characterise how it differs to supply-side and prosumer agency, and analyse its implications on workers and the platform's interests.

Method

Research Context: Ride-Hailing in Metro Manila

Ride-hailing platforms (RHP) have offered alternative yet controversial solutions to commuters in Metro Manila – a Southeast Asian megacity burdened with demographic, institutional, and infrastructural problems. Metro Manila suffers from a high population density. Metro Manila is home to 13 million people, with a population density of 21,000 people per km^2 (Philippine Statistics Authority, 2015), which is four times the density of London. Manila also struggles to enforce transport laws, maintain general order, and prevent crime (Overseas Security Advisory Council (OSAC), 2015). Metro Manila's urban transport infrastructure is deficient. By 2004, the city's trains have been operating way above maximum capacity (Dancel, 2015). Traffic congestion in Manila is among the worst in the world (Waze, 2016). Consequently, millions of commuters suffer from gruelling commutes in this gridlocked megacity.

Ride-hailing platforms, the biggest of which are Uber and Grab, use algorithms that match user demand and driver supply to provide origin-to-destination conveyance. On top of base fares, RHP's employ surge pricing which algorithmically increases base fares by a multiplier during certain conditions, incentivising drivers to meet user demand. Services range from regular sedans, bigger vehicles for those with luggage, and a luxury car variant. The commuter indicates the pick-up point and the destination point. The apps then present the estimated waiting time of the ride, and the price or a price range. If the commuter agrees with the details, the system finds a match. The app enforces several other rules. For example, demand-side actors who frequently cancel their booking after a certain number of minutes are automatically suspended by the app for a few hours to a full day. Only four (4) passengers are allowed in a regular sedan and commuter with heavy luggage must order the bigger vehicle variant. Circumventing the platform by transacting with the driver directly is also not allowed.

Qualitative Design and Data Gathering

The study used an inductive qualitative design which mainly employs in-depth semi-structured interviews. To triangulate findings, I also conducted interviews with drivers, and directly participated in the phenomenon, using ride-hailing services for more than 1,000 km of travel over 10 months in Manila. In 2017, I conducted pilot interviews with eight RHP users who were gathered through snowball sampling. For the main data gathering phase, maximum variation sampling – a type of purposive sampling – was deemed appropriate because it captures a wide range of experiences from respondents whose traits vary in meaningful ways. Maximum variation sampling gives a comprehensive view of the

phenomenon, and highlights important patterns that endure across heterogeneous respondents (Patton, 2002). Variations in the following are also found to be important, in order of priority: home location, place of work or study, income level, gender, age and frequency of use.

Recruitment was done by posting calls at strategic online spaces where people from various backgrounds converge, such as the Facebook groups of ride-hailing users, employees in the central business district, and members of the University of the Philippines, the premier state university which attracts students and staff from all income groups and from all sub-cities of Metro Manila. Out of 133 interested participants, 22 were selected based on the variables identified in the pilot study. The 8 interviews in the pilot study and the 22 interviews in the second phase of interviews comprise the 30 interviews which form this study's data. Interview transcripts were processed through NVivo 12 Pro using detailed eclectic coding as a first-cycle coding method. For the second-cycle coding, I employed focused coding to streamline and re-organise codes in ways that make the most analytic sense (Charmaz, 2006, pp. 46, 57).

The sample achieved good variability on all important variables. Thirteen males and 17 females participated. There were 10 students and 20 are either employees, entrepreneurs or unemployed. The age ranges from 18 to 50, with an average of 27. They either live or work in 14 out of 17 sub-cities of Metro Manila, including the most populous and economically important ones such as Quezon City, Makati, Taguig, and City of Manila. Hence, the participants in the sample have deep experience with a large number of major and minor routes weaving across Metro Manila. Two interviewees are from the high-income class, one

reported to be a low-income earner, and the rest fall within the lower and upper range of the middle class. Respondents hail from a wide variety of occupations. Such a diverse sample has allowed the study to gain a comprehensive understanding of the phenomenon and highlight the credible, well-corroborated patterns that exist in the heterogenous sample.

Findings

Optimisation

RHP users attempt to discover the range of benefits from RHP under different conditions, and continually identify the optimal configuration of practices which maximise these benefits. All interviewees experimented with various ways to discover and maximise benefits from RHP, often using rival RHPs, and their different services (ie. two-wheeled taxis, standard car, premium, six-seater) under different times, weather conditions, and personal circumstances. These efforts allowed them to begin understanding the realistic differentials in cost, time savings, comfort, personal space and other meaningful factors between public transport and the several ride-hailing companies and services. Users often explore how best to monitor and chase discounts from competing ride-hailing firms.

In addition, experimentation revealed additional synergies with their daily life. For example, many also realised that they could organise office colleagues living in roughly the same area to book as a group, therefore providing them additional safety in numbers, extra opportunities to socialise with each other on the way home, while at the same time splitting the bill and, making RHP a financially viable transport option. Optimisation also revealed surprising

quirks in the system that can be leveraged. For example, they found that booking at a landmark results to higher fares, so placing the destination a few meters away to an unknown hole-in-the-wall eatery results in cheaper fares. When surge-pricing kicks in for regular sedans due to increased demand, they found that it could be easier to book the premium car – and for cheaper – due to the usual low demand for premium cars. They also engaged in attempts to test which routes and timeframes of car-pooling options resulted in them being the lone passenger, essentially enjoying a standard RHP car but at the cheaper cost of the car-pooling variant.

Mitigation

Through observation and active experimentation, users discovered disadvantages and probable risks, and attempted to mitigate these. Nineteen interviewees revealed findings ways to mitigate known risks and problems. Learning from the previous difficulties with GPS accuracy, the comprehension abilities of drivers and their dubious tech-savviness, users learn to text or call RHP drivers in advance to confirm the pick-up location, and guide them toward the pick-up point to prevent mishaps. Interviewees also find how best to schedule their activities such that they use RHP during time windows when surge-pricing is unlikely to activate based on their accumulated experience. RHP drivers are penalised by the platform if they reject destinations. To avoid these penalties, they sometimes ask users to cancel, leading to a stand-off when the user refuses to cancel. However, while the booking is active, neither driver nor user can make another booking, weakening the latter's bargaining power. To mitigate this risk, some users carry multiple phones which allow them to play hardball with the driver while they use the other phone to make a new booking. One interviewee has come

up with a stock answer, “I don’t know what to do. I can’t cancel, someone else made the booking on my behalf” – thus fully placing the onus on the driver to cancel and accept a demerit from the system.

In a few cases, mitigation is not targeted on drawbacks identified through experience, but instead, on ideational interpretations on the dangers of life in Manila. For example, one male interviewee who lives in an un-gated residential area in a less affluent part of Manila shares that he does not pin the exact location of his house as he is uncomfortable to let RHP drivers – who are complete strangers – know his address. In another example, only a few of the female interviewees experienced direct sexual harassment, accidents, or crime in RHP. And yet, all seventeen (57%) female interviewees pro-actively use the RHP’s real-time tracker feature to keep their loved ones informed of their whereabouts.

After judging the trade-off to result in net gains, interviewees also make strategic adjustments and sacrifices to blunt some undesirable aspects of using ride-hailing platforms. For example, three interviewees reported having to forego meals just to afford ride-hailing platforms, and thus avoid the inconvenience of conventional public transport. They usually ate breakfast at home, reserve their lunch money toward RHPs, then have their second meal at home upon arriving in the evening, enduring their hunger at work and in school for around 10 hours. Twenty-five interviewees reported seeing their savings diminish or being unable to save at all, endangering their long-term financial security in a society with few and weak social safety nets. Eight interviewees (27%) suffer through hours of idling at malls and deserted school buildings, or simply take over-time work in their offices just to wait for surge-pricing to lower.

Boundary hunting

Despite knowing that rules govern the transaction, users experiment and test the shifting boundaries between what is prohibited yet permissible and the absolutely forbidden – a kind of strategic experimentation that can be termed boundary hunting. This is often followed by users pushing the boundary ever slightly to their advantage. Eight interviewees (27%) themselves directly admitted doing boundary hunting. These users sometimes bypass ride-hailing platforms by getting the numbers of their RHP drivers when they find out that their usual routes and schedule coincide with the work patterns of the driver. In other cases, users who are members of ride-hailing groups in Facebook try to "book" drivers by posting on such Facebook groups. Using one's RHP account to book for other people, even if the rules are against this, is also often practiced. They have figured out that drivers do not object to this.

Most examples of boundary hunting revolve around the promos and discounts. Some users scour the internet for promo codes divulged by other users online. In many cases these promo codes are naturally meant for a target sub-set. Nonetheless, users chasing after these codes try whether those will work for them too. Likewise, interviewees also admit asking students and senior citizen to book for them to avail of the student and senior citizen discount. One interviewee has a particularly ingenious scheme: He refers RHP to friends who do not need RHP as they have cars or drivers, thus gaining referral bonuses. And to compound his gains, he asks these friends to use their promotional discounts by making bookings for him. When the traveling companions of interviewees have different end destinations, they do not select

the multiple-stop option – which costs more than a regular booking. Instead, they just request or sweet-talk the driver to make multiple stops, insinuating that it is unreasonable to deny such a "small request" (called pakiusap in Filipino). Two interviewees with errands in provinces far outside Metro Manila admit that they indicate a destination near the boundaries of Metro Manila and once in the RH car, they dangle additional fares to shoehorn the driver into accepting destinations far beyond the city limits set by the platform. Drivers are in a weak bargaining position to refuse since they are unlikely to get another booking from the fringes of the city limits where ride-hailing demand is low.

As evidence of boundary hunting surfaced in the interviews, it became apparent that demand-side interviewees are unlikely to divulge other examples of boundary hunting due to the social desirability bias. Hence, effort was exerted to understand drivers' perspectives. Drivers claim a host of other exploitative practices attempted by users. For example, users try to book 4-seater cars for 5 people, and use a previous successful boundary hunt to psychologically manipulate the driver to agree to the same arrangement. They often hear the argument, "That's what we've done before and all those drivers agreed. Why can't you agree too?" The same is seen in how people with luggage book the cheaper "regular sedan" option rather than the SUV option especially meant for passengers with heavy luggage. Some passengers book a certain destination even if their real destination is still a few hundred meters away, and just "request" drivers to go "just a bit more" so they end up paying less for the distance travelled, thus short-changing the driver and the platform. Passengers also frequently make drivers wait for them at pick-up points beyond the time allotted by platform rules. However, drivers often have a weak bargaining position since already spent time and fuel driving to the pick-up point. Cancelling the trip would only waste their sunk costs. Hence, they wait for the

passengers even if that means having to take the stress of sneakily driving around the building to evade security guards and traffic enforcers who chase off cars idling by the roadside and thus impede traffic.

Straddling

Interviewees also experimented on practices that straddle platform and non-platform systems. These led to synergistic use of rival systems to accommodate different priorities in each trip. Twenty-nine (97%) interviewees still use public transport and rely on RHP on particular trips, often to economise. However, there is a pattern where seven interviewees (23%) combine both conventional public transport and RHP in the same journey, resulting in hybrid strategies. After analysing factors such as the location of train stations, time windows, proximity to areas easily accessible to ride-hailing cars, they begin to select desirable trip permutations with elements from both pre-existing and RHP-based systems. For example, two users who have family living in suburbs outside Metro Manila use public transport up to the city limits where RHP operate and then shift to RHP toward their final destinations. In these cases, they prefer to use RHP and only resort to conventional public transport to work around the constraints arising from the limited service areas decreed by both the platform companies and the city government.

Three interviewees combine ride-hailing apps with conventional public transport to strike a balance among cost, comfort, and speed. The most common practice is to use cheap and fast modes such as city trains up to the nearest station and then shift to RHP for last-mile connectivity. This practice prioritises speed and lessens cost. Another strategy is to use

public transport just to get past areas where surge-pricing is likely to be worst, and then transfer to RHP even if the destination is still some distance away. In contrast, this strategy prioritises comfort while avoiding undesirable aspects of platform solutions such as of surge-pricing. These strategies expanded the permutations available to consumers, allowing them to reduce susceptibility to the downsides of any one option, and accommodate their changing constraints and purposes.

Heuristic Formation

As usage and experimentation accumulate, interviewees eventually decided that certain strategies produced reliable outcomes and catalogued these as heuristics for routine use. Eleven interviewees explicitly described their decision trees and thresholds using the language of "personal rules," "thresholds," "principles," signalling that these practices must command routine compliance, rather than being merely provisional theories. Interviewees employ decision trees, which refers to the individualised heuristics for determining actions that have an acceptable probability of achieving desired outcomes. Twenty-seven (27) have decision trees on whether they will use conventional public transport or RHP. All interviewees have decision trees on which type of RHP service, which ride-hailing firm to use, and which strategies to use depending on the situation.

Their decision-trees often rely on thresholds to determine the next step in decision-making. For example, some interviewees have decided that they will accept higher RHP costs during peak hours as long as the algorithm's price multiplier does not exceed their self-determined threshold, ranging from three (that is, 300% of normal RHP fares), with one interviewee even

willing to accept up to five (500%). Otherwise, they will either wait or take non-platform modes of transport. Others set thresholds based on estimated waiting time for the RHP car.

Users also show an openness for incremental revision to their heuristics. After they have found satisfactory strategies, their experimentation slackens into continual albeit less determined scanning for changes in the algorithms and platform rules, and for potential improvements in their routinised practices. For example, interviewees would sometimes check other ride-hailing platform prices just to check if their current beliefs on which is the cheapest platforms still holds true.

Discussion

Previous studies have identified the strategies employed by workers, service providers and social media prosumers. However, those strategies are hardly applicable to individual consumers on digital platforms. Informed by the empirical findings, this study contributes to the literature by proposing a typology of consumers strategies comprised of 5 major types (optimisation, mitigation, boundary-hunting, straddling, and heuristic formation), and 18 sub-types. Table 1 explains the typology and gives examples. These strategies are made possible by exploiting algorithmic features and loopholes, committing infarctions that are invisible to fallible platformic systems, undermining social enforcement of platform rules, capitalising buyer's leverage, and tapping consumers' social connections. To my knowledge, this is the first time that an empirically-supported, fine-grained typology of consumer strategies has been presented in the literature.

Table 1: Typology of Consumer Strategies in Digital Platforms

TYPE	DEFINITION	EXAMPLE
Optimisation	Figuring out how to maximise benefits of using the platform, including the leveraging of loopholes without directly violating platform rules.	
- Variation Discovery	Experimentation, sometimes guided by word-of-mouth advice, aimed at identifying how various platform features and real-life usage suit a variety of needs and contexts. The resulting knowledge becomes a foundation for subsequent consumer strategies.	Consumers repeatedly trying out platforms features in the mobile app.
- Perk Seeking	Searching for consumer perks across platforms, especially to take advantage of demand-side subsidies during periods where platforms prioritise demand-side growth or engage in price wars with other platforms.	Consumers look for promos across all competing apps.
- Cost Sharing	Attempts at sharing the cost of platform solutions with other consumers, which may sometimes involve re-organisation of routines to tap wider social networks who can share costs.	Consumers arrange to go home at the same time with their officemates to share a ride and split costs.
- Proximity Exploitation	This is a type of algorithmic loophole exploitation, made possible when the algorithm allocates markedly different output values to strictly defined input parameters, such that an input proximate to these parameters yield a very different output. Proximate parameter exploitation refers to consumers choosing these proximate input parameters so that they gain similar service outcomes for far less cost, or some other advantage.	Consumers pin their origin in locations close to landmarks, to have the algorithm assign them cheaper fares than if they had pinned the landmark itself. This can potentially be present in existing and future algorithms as well. For example, in a hypothetical P2P loan platform, loan-takers could request a loan amount just below the amount to which the algorithm assigns markedly higher interest rates, thus taking advantage of lower

		interest rates for a very similar loan size.
- Pattern Exploitation	Finding patterns in the operation of the algorithm, and instead of manipulating input parameters (like in proximity exploitation), users adjust their behaviours so that they can synchronise their activities with the algorithm's patterns in ways that yield net benefits.	After determining that algorithms do not assign additional passengers to car-pool services on certain times, consumers adjust their routines accordingly.
Mitigation	Identifying problems and risks in integrating platform use into daily life, and developing practices to offset these.	
- Pre-emptive communication	Direct communication with human service providers on the supply side to prevent mistakes in service delivery.	Consumers call ride-hailing drivers in advance to relay instructions.
- Personal compensation	Adjusting personal routines and habits to mitigate problems arising from the use platforms, for as long as consumers garner net benefits despite the sacrifices made.	Consumers idling in malls for hours to wait out surge pricing, after deciding this trade-off is still better than taking other transport modes.
- Multi-homing (Zhu & Iansiti, 2019)	Use of multiple platforms to reduce risks of relying on just one platform.	Consumers cancel trips with difficult drivers, despite the risk of receiving a temporary, automated penalty, since they have user another ride-hailing app
Boundary-Hunting	Identifying and exploiting the limits of enforceable platform rules. Consumers defy rules when enforcement relies on mutual social compliance, or infractions are likely to be invisible to the algorithm.	
- Perk Piggybacking	Appropriating perks granted to other users.	Consumers use the ride-hailing accounts of students or the elderly to gain their discounts.
- Platform disintermediation (Zhu & Iansiti, 2019)	Consumers circumventing the platform and transact directly with the supply side.	Consumers joining social media groups populated with ride-hailing drivers, to bypass the platform.

- Baiting	Once the supply-side commits to a point where sunk costs are high enough, consumers coax the supply-side to breach platform rules, with or without incentives.	Consumers asking ride-hailing drivers to the edge of an allowed service area, and once there at the edges of allowed service area, offer extra pay to drive them to destinations outside the city.
- Normative Manipulation	Invocation of norms of goodwill, sympathy and consideration to compel human actors on the other side to concede to consumers' requests, often involving complicit circumvention of platform rules; sometimes in ways that harm the interests of the ones who accede to such requests.	Placing the destination pin a few kilometers short of the actual point to reduce fares, and then sweet-talking the driver to "be understanding" and "just drive a bit more" until the real destination is reached.
- Precedent Exploitation	Precedents are used to make claims that the concessions demanded by consumers are legitimate, thus replicating previously successful boundary hunts.	Consumers cornering drivers into accepting 5 passengers for a 4-seater sedan by saying, "That's what we've done before and all those drivers agreed. Why can't you agree too?"
Straddling	Conditionally shifting to pre-existing and/or rival alternatives in response to changing constraints and purposes.	
- Contingent Straddling	Straddling between the platform and non-platform solutions to take advantage of usage permutations that best suit the needs of the moment.	To prioritise speed, consumers use fast modes like trains and then use ride-hailing for last-mile connectivity.
- Hedged Straddling	Straddling between platform and non-platform solutions to reduce exposure to the platform's undesirable features.	Using public transport to avoid surge-pricing, and then shifting to ride-hailing afterwards.
Heuristic Formation	Designating proven strategic repertoires, and the conditions for their use, as mental templates to guide fast decision-making.	
- Decision Trees	Use of individualised heuristics for determining conditional action sequences that have an acceptable probability of achieving desired outcomes.	Experienced consumers have established rules for when to choose among Uber and Grab, and which service type.

- Thresholds	Use of specific, often quantitative, conditions as triggers for activating a decision.	After experiencing the trade-offs involved, consumers decide up to which surge multiplier is acceptable. If the surge multiplier exceeds that point, suffering through public transport is deemed worth it.
- Horizon Scanning	The continual albeit less determined scanning for changes in the platform, and for potential improvements in routinised practices.	Interviewees occasionally check other ride-hailing platform prices just to check if their current beliefs on which is the cheapest platforms still holds true.

Characterising Consumer Strategies in Digital Platforms

The strategies in the typology shed light on some key characteristics of consumer agency. First, consumer agency is distinct to supply-side and prosumer agency. As expected, consumers are able exert leverage in ways that the supply side is unlikely to replicate. For example, several forms of boundary hunting leverage the supply side's profit imperative and sunk costs. However, strategies that rely on social interactions, which can be called "social strategies", are distinct from those of workers and prosumers. Workers form supportive communities, or leverage mass numbers to force concessions from platform companies. Prosumers join reciprocal pods to share algorithmic gossip, among others. Both groups engage in social alliances that are expansive, whereby growing membership numbers adds value to each member. In contrast, consumers' same-side social strategies are limited client-patron relationships exemplified by commuters (client) who piggyback on the discounted ride-hailing accounts of their grandparents (patron); or as selective cliques, exemplified by

officemates forming small, cost-sharing groups. In contrast to *expansive* worker and prosumer communities, the logic of consumers' *client-patron* and *cliquish* relations is to keep member sizes optimal and exclusively involve people with highly specific attributes who can be quickly tapped at the moment of need. Hence, while the notion that consumer strategies lack a social element is incorrect, it still holds that previous literature on the social strategies of workers and prosumers do not necessarily reflect the reality of consumers.

Second, in a wide class of digital platforms, consumer agency does not only contend with the platform's algorithmic and semi-algorithmic managerial forms of control, but also with the strategic intent of the human counterparty, expressed through cross-side *social* strategies. Boundary hunting emphasises that many platform rules cannot be policed solely by algorithms, and some infractions are invisible to the system – unless the human counterparty insists on rule compliance or reports the infraction to the platform. These rules can only be enacted through mutual compliance of both supply-side and demand-side actors, for example the "four-passenger" rule in sedan cars. The need for mutual compliance means that some platform rules, and semi-algorithmic techniques of control can be re-negotiated, resisted and shaped at the level of social interaction – that is through bargaining and contests for interpretation between the human counterparties on the demand and supply sides. Hence, even Jarrahi et al's (2019) two-fold conception of platformic control, which only considers algorithmic and managerial techniques mainly emanating from the platform company, underestimates the social forces constraining human agency. A third construct, which can be called "counterparty intent", ought to be considered as part of forces in the platform against which user agency must contend with.

Lastly, the findings indicate that consumers' exercise of strategies inflicts disproportionately higher loss to platform workers, and less to the platform's interests. Many of the consumer strategies in the typology increase the supply side's operational costs, time delays, and occupational stress – all of which directly impact the workers' welfare and profit. The resulting indirect impact to the platform's revenues is not necessarily consequential, since platforms may prioritise marketshare and consumer reliance over profit. Ironically, the evidence indicates that once consumers establish successful heuristics that limit platformic control, they then firmly incorporate platform use into daily life. Thus, consumers' agentic deployment of strategies to soften platform control also hardens consumer reliance on the platform. In sum, the deployment of consumer strategies sometimes means that workers lose out, while the platform benefits from increased user reliance.

Conclusion

Consumer strategies have not received as much attention as supply-side and prosumer strategies, which is unfortunate given the importance of consumers in the digital economy. This paper addresses this gap in two ways. First, it presents a fine-grained typology of consumer strategies in digital platforms. It identifies optimisation, mitigation, boundary hunting, straddling, and heuristic formation as five main types, and details 18 sub-types. Second, these strategies reveal several important insights about consumer agency. Consumer agency is different to supply-side and prosumer agency, in terms of innate leverage, and in how these groups form, conduct and derive strategic value from social interactions. The wide use of social strategies that aim to manipulate the other human party means that counterparty intent should be conceived, alongside algorithmic and managerial control, as tripartite forces

constraining user agency. Lastly, consumer strategies often inflict disproportionate costs on the supply-side, but these same efforts to soften platformic control may ironically serve the platform's interests because consumers strategies reinforce the consumers' long-term reliance on platforms.

Future studies into user strategies, algorithmic systems, and digital platforms will benefit from the typology and conceptual implications laid out here. A promising direction is to explore how these consumer strategies can be used to serve consumer welfare and the public good, while still respecting the legitimate interests of platform companies, service-providers and workers.

Disclosure statement

No potential conflict of interest was reported by the author.

Funding

The research for this paper was partially funded by the author's department and college.

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