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Novel Peer-to-Peer Car Rental Platform

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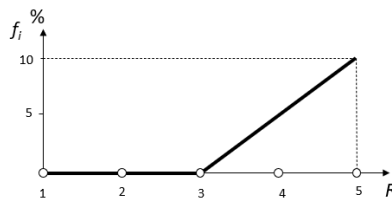
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Peer-to-Peer Car Rental Based on A Behavior-Sensitive Pricing Model

Peer-to-peer (P2P) car share has been around since 2009, but its growth has been facing persistent challenges, including high costs of cleaning vehicles between rentals. This invention is about a novel pricing model designed to incentivize both the owner and renter to do their part to keep the vehicle clean and tidy, thereby eliminating the need for a third-party service to do so.

A typical P2P transaction involves three parties: an owner who rents out his/her vehicle and received a payment; a renter who pays to rent a vehicle; and the P2P platform which charges a commission (as % of the rental charge) for providing the service. Typically, rental charge is determined by multiple factors, such as vehicle maker/model/age and supply/demand. In this invention we augment a behavior element in the calculation to incentivize good behaviors.

The first step towards creating a behavior-sensitive pricing model to establish a *behavior metric*. This can be accomplished in many ways. A convention approach is to use customer feedback, i.e., star rating R , typically from 1-5, as a proxy for behaviors. This applies to both owners and renters. A function f_i can be used to correlate financial incentives, in terms of discount (%) for a renter or bonus (%) for an owner. The following figure shows an example of $f_i(R)$



Note that when a new renter or owner enters the P2P system, he/she could be assigned a default R value of 3. Over time, the system will calculate R based on the actual data collected. Note that the system can also refuse services to those whose R value falls below a threshold, such as 2. This will reinforce positive behaviors between both parties, reducing abuse related disputes and “weeding” out bad behaviors by the pricing power.

The behavior-sensitive pricing model can be implemented in several ways, for instance, using the steps in the following

1. Define the *normal* rental rate Q using non-behavior related factors (e.g., vehicle maker/model/age and supply/demand)
2. Calculate discount/bonus based on behaviors for both the owner and renter: $f_i(R_{owner})$ and $f_i(R_{renter})$
3. **Calculate renter charge:** $W = Q - f_i(R_{renter}) \times Q$
4. Commission: $Y = Q \times p$, where p is commission rate in %
5. **Calculate proceeds for the owner:** $Z = (W - Y) + f_i(R_{owner}) \times (W - Y)$
6. **Calculate revenue for the P2P platform:** $U = Y - f_i(R_{owner}) \times (W - Y) - f_i(R_{renter}) \times Q$

Note that in this model, the commission rate p must be set at a level that accounts for the behavior incentives to be paid out to both the owner and renter if needed. The method is illustrated in the following example:

	Owner (4 Star) Statement	Renter (5 Star) Statement
Medium size SUV	Milage Out 26,375	Milage Out 26,375
Price (unlimited miles) \$745/wk.	Milage In 28,532	Milage In 28,532
Commission: 28%	Total Miles Driven 2,157	Total Miles Driven 2,157
Insurance: \$10/Day	Rental income 7 days @ \$80/day \$560.00	Rental 7 days @ \$80/day \$560.00
Behavior incentive: 10% 5 Star	Commission 25% -\$140.00	Rating Disc. 5 star 10% -\$56.00
5% 4 Star	Bonus 4 star 5% \$28.00	Insurance 7 day @ \$10/day \$70.00
0% <4 star	Credit to Owner \$448.00	Tax 8% \$45.92
Tax: 8%		Total Charge to Renter \$619.92

Platform Revenue U:			
\$560*25%	-	\$28	-
\$56			
Commission	Owner	Renter	Revenue
	Incentive	Incentive	

The example shows that behavior incentives are explicitly stated in the financial statements, and that the incentives are paid out from the commission that a P2P platform collects. In general, the platform makes less money from owners/renter with higher behavior scores. However, better user behaviors on the platform will translate into lower operating costs, such as reduced needs of cleaning and dispute resolution, yielding a overall better operating performance of the P2P platform.

Disclosed anonymously