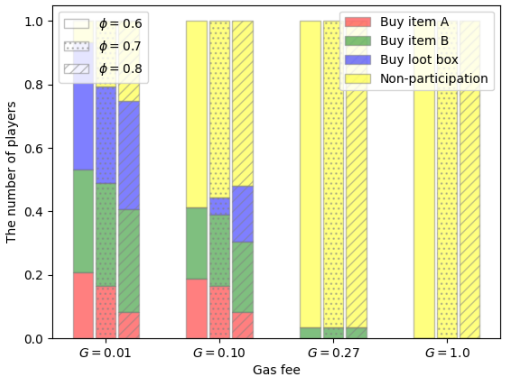

Figure 6: The Impact of Gas Fees on Players' Behavior

market nor the 2CM. When $G = 1.0$, no one will buy the item or loot box. Hence, gas gee has the most significant impact on the primary market. When the gas fee is too high, players will abandon the primary market first. The reason is that the players will bear the uncertainty when purchasing the loot boxes. Then, the players who choose to buy item A in the 2CM will give up the purchase when the gas fee increases. Due to the high value of item B, players who choose item B in the 2CM can afford a relatively high gas fee.

7 CONCLUSION

In this paper, we presented the first blockchain-based loot box market model considering the primary market and 2CM. We show that the players who strongly prefer one item will prioritize the 2CM. Besides, when the prices in the primary market and 2CM and the probability of acquiring high-value items increase, some players will abandon purchases. In addition, compared with EUT, the game provider in PT, considering his aversion to loss and risk, should adopt a conservative pricing mechanism to boost his utility. Properly considering the game provider's behavioral characteristics can increase the utility. It is worth mentioning that the gas fee is a significant factor in the loot box trading market for blockchain games. When gas fee increases, the primary market will be the first to be affected due to more significant uncertainty. Then, when the gas fee increases, players who buy item A in the 2CM will choose to give up. Because item B is relatively valuable, players who prefer item B can afford a higher gas fee. We conclude that the gas fee has a more substantial effect on the primary market than the 2CM, and players who prefer high-value items can tolerate high gas fees.

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