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# What Causes Users' Unwillingness to Spend Money for in-App Purchases in Mobile Games? a Structured Abstract

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# What Causes Users' Unwillingness to Spend Money for In-App Purchases in Mobile Games? A Structured Abstract

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## INTRODUCTION

Worldwide in-app purchase revenues almost reached US$37 billion in 2017 (Dogtiev, 2017). Most of this is in-app purchases in video games, and mostly in mobile video games—a now substantial but under-researched industry. The annual growth of in-app purchase revenue averages 98% from 2011 through 2017, while the growth of paid-for-apps sales only averages 31% within the same period. Yet, only 5% of total app users make any in-app purchase (Sterling, 2016), and 70% of those in-app purchases appear to come from big spenders or 'Whales' who account for only the top 10% of the paying users (Shaul, 2016). This enormous imbalance emphasises the importance of understanding why some people make in-app purchases. Through our exploration of in-app purchase behaviour, we discover that it is more interesting to reverse the question and ask why the majority of users are unwilling to spend money on in-app purchases.

In our exploratory phase, we conceptualise in-app purchase as an impulsive behaviour rather than planned behaviour. We identified a global theme of users' unwillingness to spend money and a prevalent perception of the unfairness of the business model. Underlying all that, we theorise of a perceived aggressive monetisation based on a combination of the theory of fairness and the theory of psychological reactance.

In our explanatory phase, we tested several hypotheses based on the conceptual model developed in the exploratory phase. We found significant non-linear relationships which supported our conceptualisation of in-app purchase as impulsive behaviour. Using the hurdle model, we identified that both perceived fairness and perceived aggressive monetisation explain users' decision not to spend money on in-app purchases, but not how much they spend money if they chose to spend any. On the other hand, the users' willingness to pay and the time they spent playing explained both their decision to spend money and how much they spend. A further examination using a field experiment confirmed this finding. It also showed an additional transaction size effect where smaller sized offer generates a higher willingness to pay, relative to the stated price.

## BACKGROUND

### In-App Purchase

In-app purchase (IAP) exists in both free-to-play and paid apps, but it is the dominant source of revenue for free-to-play apps (Hsiao and Chen 2015). In-app purchases in free-to-play apps are different than purchase decisions in conventional business models. Conventionally, the customer decides to purchase or not before the actual use and consumption of a product. In free-to-play apps, users can download and use the apps for free, but the apps offer in-app purchases and occasionally also contain in-app ads in exchange for additional content or features.

The offering of in-app purchases in free-to-play apps has been described as problematic and rife with potential ethical issues by some scholars (Alha, Koskinen, Paavilainen, Hamari, and Kinnunen 2014). The introduction of IAPs to formerly IAP-free apps (i.e. paid apps or apps containing ads) are unpopular and met with resistance from the non-paying users (Pierce and Wooldridge 2014). The fact that app users may include children and minors, vulnerable to marketing tactics, adds to the controversy and complexity of this phenomenon (Clay 2015).

Despite these issues, the in-app purchase is currently the dominant business model in the mobile apps market. Furthermore, the in-app purchase represents a novel purchase situation in the marketplace, in which the app (the product) provides the main functions for free. Therefore, it denotes a relevant new field of study for marketing scholarship.

### Perceived Fairness and Aggressive Monetisation

This paper is the first to apply fairness theory in the IAP context. Prior studies have applied fairness theory to the general context of consumer behaviour. Seiders and Berry (1998) theorised how consumers use justice principles to evaluate their service experience and reacts strongly to any unfairness they perceive. In general, the fairness theory attributes an individual's perception about fairness or equity of a particular relationship as the motivation for specific behaviour. Theoretically, perceived fairness significantly increase willingness to pay (Ajzen, Rosenthal, and Brown, 2000) and the likelihood of repeat purchases (Homburg, Hoyer, and Koschate, 2005). The second theory we adopt is the theory of psychological reactance. Psychological reactance theory suggests that individual users react negatively to the perceived restriction of the freedom to engage in a behaviour (McCoy, Everard, Galletta, and Moody 2017). According to the theory, users who view that app developers have limited their choice to play an app for free will react negatively and resist the perceived restriction on their freedom of choice. Using both theories, we conceptualise a user’s perception of aggressive monetisation as a negative antecedent of perceived fairness of in-app purchase in mobile games. Aggressive monetisation is currently a salient topic in the video game industry, with the issue raised as a reason for more regulation in various countries. Legislators in several countries have argued whether some in-app purchases can be considered gambling (Gerken, 2018; McCormack, 2018). An announcement that the WHO added Gaming Disorder to its list of official diseases, had the head of operations of Microsoft Xbox address the responsibility of gaming companies toward their users' healthy gaming behaviour which includes

their in-game spending (Dring, 2019). This paper will be the first to conceptualise this issue to explain the users' spending behaviour.

## METHODOLOGY

This study uses the multi-study mixed-method approach that starts with a qualitative exploratory phase to conceptualise the phenomenon and a quantitative explanatory phase that test the conceptual model. The qualitative phase uses a multi-method qualitative approach to the study of consumer behaviour in an online setting following the approach described by Brodie et al. (2013). The first stage of this phase uses qualitative data gathered from user-generated content from online game review sites and other websites where users discuss in-app purchases. The second stage involves a series of qualitative in-depth interviews with active mobile game users. This approach allows for a more in-depth interpretation of the data collected in the first stage, allowing for further clarification of insights obtained from the user-generated content. We used thematic analysis using both Leximancer and NVIVO to build a conceptual model using 4,092 unique user comments followed with in-depth interviews of 18 active mobile gamers which include ten sessions of think-aloud protocols to verify the themes.

The quantitative phase also uses a multi-method approach that starts with a survey of 527 US and 526 Australian mobile gamers. We recruited the respondents using Qualtrics as the data panel service provider. We analysed the data using the hurdle model, an approach commonly used in econometrics to model smoking, drinking, and gambling behaviour. A similar approach was also adopted by Park et al. (2018) to model a social contagion effect to in-game spending in an MMORPG community. We also conducted a field experiment as a follow-up study to confirm the findings from the survey. The field experiment also examines situational factors, with three between-subject (i.e., size of the transaction, the mode of currency, and informed probabilities) and one within-subject treatment (i.e., special offers) based on the marketing tactics commonly used to monetise mobile games. Overall, there are 264 participants assigned randomly to eight treatment groups.

## RESULTS AND DISCUSSION

### Phase 1: Qualitative Exploratory

A software-assisted thematic analysis of the mobile game reviews using Leximancer identified a generally negative users' sentiment toward in-app purchases, with a global theme of an unwillingness to spend money and perceived unfairness of the overall "free-to-play" business model. A further probe using in-depth interviews of mobile gamers underline five aspects of the business model users view as the source of this unfairness. We conceptualise these five themes as dimensions of a new formative construct that we label perceived aggressive monetisation, which is concurrently a salient issue in the video game industry. *Manipulativeness* refers to the complaints that some apps seek to exploit their users by controlling the game balance to maximise IAPs. *Addictiveness* relates to the expectation that users' will spend an increasingly large amount of money compulsively the further they went in the game. *Riskiness* is a common complaint about

IAPs that involves a random outcome which set a very low probability of getting the desirable items. *Intrusiveness* refers to the users' complaint that some apps push their IAP offers without the users' consent, using pop-ups at inopportune moments. *Overpricing* is a frequent user complaint that the items offered for IAPs are priced unreasonably high. For example, the price of a starter packs might be as high as $99, which is considered far too expensive by most users (but may catch a few users who cannot resist paying to get ahead). The output of the qualitative phase is propositions that conceptualise how perceived aggressive monetisation reduce users' perceived fairness of the in-app purchase and their willingness to spend money which leads to less actual spending on in-app purchase. This phase also formulates the fifteen items to measure perceived aggressive monetisation validated in the quantitative phase.

**Phase 2: Quantitative Confirmatory**

Before conducting the main studies, we did both a pilot study and a pre-test to validate the measures developed in the qualitative phase. The pilot study recruited five marketing experts and five mobile gamers to evaluate the construct and face validity of the formulated items. The pre-testing recruited 103 mobile gamers to complete the questionnaire. Analysis of the pre-test result and the main survey showed good internal consistency and construct validity.

Analysis of the survey result confirmed our hypothesis that perceived aggressive monetisation reduced perceived fairness and increased the likelihood of users unwilling to spend any money on in-app purchases and decreased the likelihood of users spending any money on in-app purchases. Conversely, perceived fairness reduced the likelihood of users unwilling to spend any money on in-app purchases and increased the likelihood of users spending any money on in-app purchases. However, once the user decided to spend money, perceived aggressive monetisation, and perceived fairness does not influence how much money the users spend. This finding showed a separate decision mechanism between conversion (i.e., to spend any amount of money or not) and the degree of spending (i.e., how much money to spend).

On the other hand, the users' willingness to pay and the time spent playing the game explained both the conversion and the degree of spending. There is also a significant interaction between willingness to pay and self-control to explain the degree of spending. This finding supported our conceptualisation that once users decided to spend money on in-app purchases, the subsequent spending decision is more of an impulsive mechanism.

The result of our field experiment confirmed the findings from the survey. Participants who reported a high score of perceived aggressive monetisation for a particular IAP treatment are more likely to have a lower willingness to pay for that specific IAP than the stated price. On the other hand, perceived aggressive monetisation does not have a significant correlation to how much they are willing to pay above the indicated price (price premium). Conversely, we found that self-control and time spent playing the mobile game significantly explained the participant's relative willingness to pay. Thus, findings from the field experiment support the findings from the survey.

As for our treatment variables, after controlling for time spent playing, we found no significant difference between regular loot box offers and special offers that bundled loot boxes

and currencies. However, we found the size of transactions to be a consistently significant treatment for both the loot box and special offer IAP. In both scenarios, the participant's *relative* willingness to pay (RWTP) is higher for the small transaction size (i.e., $4.99) than the large transaction size (i.e., $49.99). We calculated RWTP by dividing the reported willingness to pay with the stated price to compare it across treatment groups.

For loot box offers, there is also a significant difference of RWTP between IAP offered in real money vs in-game money. Participants expressed a significantly higher RWTP for loot boxes offered in gems than loot boxes offered in real money. The difference of RWTP by informed probability is also significant for loot boxes but not for the special offer. The RWTP for loot boxes is significantly higher for groups where the IAP offer explicitly stated the probability of the loot box. Finally, there's also a significant interaction between the mode of currency and the informed probability. The RWTP for loot box is the highest when the probability is informed, and the offer is made using the in-game currency.

## CONCLUSIONS AND IMPLICATIONS FOR THEORY AND PRACTICE

In conclusion, we developed a construct of perceived aggressive monetisation as a negative influence on willingness to pay and actual in-app purchase spending by combining the theoretical framework of perceived fairness and psychological reactance. From the explanatory research, we tested the model and found a two-part mechanism of intentional and impulsive user decision making. Perceived aggressive monetisation and perceived fairness explained the users' likelihood to convert from free user to paying user. Once a user decided to spend money, how much money they spent are explained by their self-control and how much time they spent playing the mobile game. However, it is also possible for spenders to reduce their spending or stop spending money if they perceive the game to be over-monetised.

This finding is relevant to the current issue of how game publishers need to balance their monetisation strategy to create a sustainable ecosystem for this new business model. Aggressive monetisation that mainly targets big spenders or "whales" will lead to "overfishing" that alienates free users as well as small and medium spenders. Even big spenders can get burnt out if the game publisher treats them as cash cows. We recommend mobile game developers to adopt a "long game" monetisation strategy to nurture free users into paying users and reduce user churn among the paying users. This strategy means not relying on IAP tactics that lead to high perceived aggressive monetisation.

Furthermore, overemphasis on short term profit by game publishers might also lead to unhealthy behaviours by game players and introduce risk to the user's wellbeing, such as addiction and overspending. Ultimately, it is the user's own decision to spend money on the things they enjoy or not. However, we cannot ignore how game publishers can and do employ sophisticated monetisation strategy designed to create compulsion.

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