Seung Hyun Kim

From: Patrick Y.K. CHAU (Information & Management) <EviseSupport@elsevier.com>
Sent: Friday, August 4, 2017 5:01 PM
To: seungkim@yonsei.ac.kr
Subject: Your manuscript, INFMAN_2016_126, has not been accepted

Ref: INFMAN_2016_126
Title: Mobile App Piracy: How Does Mobile App Piracy Affect Legitimate Sales?
Journal: Information & Management

Dear Professor Kim,

Thank you for submitting your manuscript to Information & Management.

Your submission has been reviewed by a review panel which consists of an Associate Editor and two reviewers. I regret to inform you that the review panel of your manuscript has advised against publication. I read both their reviews and the paper and concur with their assessment. I therefore reject your paper.

For your guidance, the reviewers' comments are included below.

We appreciate your submitting your manuscript to this journal and for giving us the opportunity to consider your work.

Kind regards,

Patrick Y.K. CHAU
Editor-in-Chief
Information & Management

Comments from the review panel:

- Associate Editor -

This paper investigates the effect of piracy on legitimate sales of mobile apps, more specifically, on mobile game app on IOS platform. Two reviewers were invited to review the paper. One recommends rejection and another recommends major revisions. Both find the topic interesting and relevant. I agree with them. However, both have concerns as to the issues such samples and methods. In addition to what the reviewers have suggested and commented. I have similar concerns:

1. There are maybe thousands of game app on IOS platform. The authors may only be able to observe the top 200 downloaded apps for each time period. Therefore, if an app's rank is after 200, the data is missing. It appears to me that current approach didn't accommodate this problem.

2. I feel the choice of instrument to be problematic. Usually, IV needs to be related to x but not y. However, holiday may influence y and x simultaneously. May not be appropriate, maybe the change of piracy policy will influence piracy downloads directly but will influence legitimate downloads only through piracy downloads.
3. network effect has a very broad meaning. whether the game is multiplayer game or not may exert one type of network effect. On the other hand, the number of downloads may place another type of network effect.
4. The contribution is not clear. Just as reviewer 2 pointed out.

Therefore, I recommend rejection to this paper.

-Reviewer 1 -

This research examined the impact of piracy on legitimate sales by collecting both the sales ranking data from App Store and the number of pirated downloads from another website. Results suggest that piracy has generally promoted legitimates sales through sampling and word-of-mouth effects. Overall, I believe the topic is important and interesting. Below please find my comments:

1. In the introduction, the authors mentioned that the piracy rate for the top 100 paid apps in Apple's App Store has been reported to be as high as 92%. Since Apple has been aggressively improving its security mechanisms, I wonder whether the piracy rate is still as high on the recent iOS platform.

2. The authors mentioned that word-of-mouth effect and sampling effect are some of the key promotional effects of piracy. Is sampling effect independent of word-of-mouth effect? I understand that word-of-mouth might only be possible after one samples the software.

3. My main concern is on variable selection. While this issue has been repeatedly raised by reviewers, I wish to highlight my struggle in seeing the logic behind the selection of variables in the research model. I certainly see the rationale for examining the impact of piracy on legitimate sales, but the choice of the remaining variables does not seem apparent to me. Table 1 does not help me much either. For example, why in-app purchase function is a way to realize quality differentiation in the mobile app context? I suppose mobile apps mostly utilize the freemium model by making the apps freely available and attempting to entice users to make in-app purchases.

4. Some of the research variables need to be defined, if not clearer definitions. For example, what exactly is classic apps?

5. The hypotheses development might need refining. For example, in the arguments leading to H3, the authors have largely focused on examining word-of-mouth and user rating. The discussion on the way rate moderates the impact of piracy on sales is very limited, if not nonexistent.

6. I understand that network externality is measured as a dummy variable. It basically captures whether an app supports a multiplayer mode. In such a case, I think it is about potential network externality.

I wish the authors best of luck in moving the research forward.

-Reviewer 2 -

Mobile App Piracy: How Does Mobile App Piracy Affect Legitimate Sales?

This paper has sought to understand the impact of piracy on legitimate sales in the mobile app context. The authors have collected data from two sources: a website that hosted the pirated software and the sales ranking from official App store. The results show the download of pirated software has a positive impact on sales ranking.

Overall, the paper is well-written. The literature review section is well written and informative. The authors have generally been clear in justifying of the empirical strategy, except for the 2SLS strategy on page 15:

"To address this endogeneity issue, we first followed the standard two-stage least squares (2SLS) method and used lagged downloads, weekends and holidays to instrument for actual pirated downloads. The rationale is that the number of pirated downloads is expected to be higher on weekends and holidays. Although legitimate sales may also increase on these days, the sales rank is not expected to be correlated with weekends or holidays because a rank is a relative measurement that meets the exclusion restrictions for instrumental variable analysis. The use of weekends and holidays as instrumental variables also can be found in the literature (Lambrecht et al. 2011)."

Simply put, I am not convinced that sales ranks is not correlated with weekends or holidays because intuitively, people would also have more time to buy those apps during holidays. But needless to say, this is an important issue in the whole empirical analysis.

My other major concerns for the study are the following:

1. The study has only focused on game apps in the mobile context, so I would question the generalizability of the results. In the mobile context, game apps typically do not cost much. Hence, I would not be surprised that the effect is more promotional. The authors need to be more careful about claiming that piracy will generally promote legitimate sales. I feel the contribution would be more if the authors has structured the study to include other applications, perhaps in a PC setting, and show that the effect observed in the current study is more of a mobile app phenomenon. The discussions can then be extended to the fact that most mobile apps follow more of a freemium model, therefore the pirated version or lowly priced legitimate version are both used for promotional purpose. The app developers mainly earn income through in-app purchase. For other types of software that are offered under a different setting, the piracy outcome and the piracy impact on legitimate sales may be different because the developers are simply using a different business model.

2. I would like to have more information about the coding the NETWORK variable since more gaming apps should be network connected? It may also be correlated with AGE since old apps may not have the network feature.

3. Lastly, I feel that results of the paper have basically confirmed the theoretical results. Therefore, the study does not offer much novel insights. Most of the discussions in the "Discussion and Conclusions" section are already known to both the practitioners and academicians. I think the paper should at least have some novel results.

Minor issues:

Please elaborate more on the following paragraph in page 26, especially regarding free in-app purchase. It would be nice if the authors can offer some examples on how pirated gaming app can also make free in-app purchase.

“Although an in-app purchase function has been considered an effective way to increase demand for a mobile app (Ghose and Han 2014), its inclusion may worsen the problem by displacing consumer demand. Our finding is interesting because some developers used an in-app purchase mechanism in hopes of preventing piracy but failed to achieve the anti-piracy effect initially expected. A possible reason for this failure is that users can obtain free in-app content even with a pirated version.”