Imitation is the most sincere form of flattery, unless you are an app developer

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For every two mobile apps released, one is a clone of an existing app. However, new research published in the INFORMS journal *Information Systems Research* shows the success of the original app is not always adversely affected by the creation of clone apps. In fact, the study, which was conducted by Carnegie Mellon University researchers, found that whether the copycat app increases or decreases the number of downloads of the original is dependent upon the quality of the copy.

The number of original apps released each month decreased from 90 percent to 45 percent between 2012 to 2017, despite the number of total apps released per month growing from 50 to more than 400. Several factors have contributed to the increasing number of copycat apps, including the low production costs for apps, little power among app developers to brand their content, and the lack of intellectual property laws that protect app ideas.

The study, "Copycats Versus Original Mobile Apps: A Machine Learning Copycat Detection Method and Empirical Analysis," was conducted over a five year period by Quan Wang, Beibei Li, and Param Vir Singh of Carnegie Mellon University. The researchers studied a sample of 10,100 action game apps in the iOS App Store that had been created by 5,141 developers.

The researchers evaluated both the functionality and appearance of the copycat apps compared to the original app. They found that the impact of copycat apps had on the sales of the originals depends on the quality

and level of deceptiveness of the copycat app, or how easily it can be discerned from the original app.

According to the study, high-quality, non-deceptive copycat apps negatively affected the demand for the original app, as mobile users are selecting them knowingly as a substitution for the original. For every 10 percent increase in downloads of a high-quality copycat, the download rate of the original app decreased by nearly 5 percent.

"While the original apps are innovators, they do not always enjoy technological advantage over the copycats," said Wang. "As the concept of an app is not protected by patents, a copycat can imitate the original and beat it by exploiting an overlooked additional feature, undercutting the pricing, or out-advertising."

Conversely, low-quality, deceptive copycats positively affected the demand for the original app, as they serve to advertise the original, but due to their poor quality, offer no significant competition. For every 10 percent increase in the number of downloads of a lower quality copycat app, the download rate of the original app actually increases by more than 9 percent.

"A mobile app copycat can be both friend and foe of the original app," said Li. "Both competition and advertising effects exist, depending on its quality and level of deceptiveness."

In addition to the study's findings, the method utilized by the researchers to identify the copycat versions of each of the original apps had an accuracy rating of nearly 92 percent, and could provide a very valuable resource to app developers.

"For app developers, our approach can provide an efficient and scalable way to automatically detect suspected copycat products in the market,"

said Singh.

More information: Quan Wang et al, Copycats vs. Original Mobile Apps: A Machine Learning Copycat-Detection Method and Empirical Analysis, *Information Systems Research* (2018). DOI: 10.1287/isre.2017.0735

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