Predicting Mobile Application Success Based on First Impressions

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ABSTRACT
The factors that govern the success of a mobile application undergo a highly meritocratic and democratized process. The public volitionally invests in applications with superior designs and better utility factors regardless of the amount of money a company had invested in its design. Or do they? If well-implemented application succeed and poorly-designed applications fail, how do a handful of mindless diversions obtain mass favor over seemingly better crafted useful applications? The road to success is risky and slightly unpredictable. For that reason, we initiated this project in an attempt to gain clarity on a wide-scale macroeconomic event that occurs everyday: downloading a mobile application. By examining descriptors on the application page we can determine if a correlation exists between quintessential words, icons, and phrases and the future success of that application. This has the potential to save application designers copious amounts of money in market research geared towards understanding what incentivizes users to connect to applications. First impressions, we argue, really do matter.

Author Keywords
Mobile Applications; First Impression; Prediction

ACM Classification Keywords
H.5.2. Information Interfaces and Presentation (e.g. HCI): User Interfaces

INTRODUCTION
It has long been the goal of many to be able to know ahead of deployment whether a given product will be successful or not. Forecasting the success of a product ahead of deployment could save designers billions of dollars[4]. But the question still remains: How does one predict the success of an application?

Existing approaches involves deploying applications and potentially failing. To avoid the time-consuming and expensive process of deploying an application that might fail, mobile application developers, for example, take many measures to

gauge the success of their applications prior to release. The first may be the release of a beta version of their application to a restricted community before the release of that app to the public. This allows them to estimate future interest. However, conducting a meaningful beta test requires a reliable and closed community of trustworthy individuals. Although many large firms have such resources, independent mobile application developers have to deploy their applications and modify them later[3]. They learn through trial-and-error how to make their application more appealing. Our approach has the potential to improve the aforementioned design process by helping designers get the right design prior to deployment[4].

It has been well-established that first impressions matter. From interviews to website aesthetics, users form an opinion within the first few seconds of viewing a given stimuli. Thus far, first impressions have been used in the context of websites. Since designers know that first impressions matter, independent mobile application developers have tried to obtain feedback on specific features of their application through advertisements and crowdsourcing services. Nevertheless, such services can be costly and the process, being unformalized, does not offer the developer a holistic view of the potential success of their application. It simply offers them an idea of user opinion's regarding a feature in isolation.

The existing approach involves deploying an application and potentially failing. To avoid the time-consuming and expensive process of deploying an application that might fail, mobile application developers, for example, take many measures to gauge the success of their applications prior to release, one of which is releasing a beta version of their application to a restricted community before releasing the app to the public in order to estimate future interest [**?**]. However, conducting a meaningful beta test requires a reliable and closed community of users. Although many large firms have such resources [**?**], independent mobile application developers have to just deploy their application and modify it, if possible, so that through trial-and-error the application might become more successful.

For our approach, we will use Android mobile games to test during our experiment. We choose to use mobile games for our experiment as the data was widely available. As users' first impressions of mobile applications are most often made through the application store, our study will simulate the features found on such pages. We seek to establish this link by conducting a series of online studies. Success will be

measured by an app's popularity, represented by the number downloads it obtains. Potential measurements to predict success used will be its icon, slogan, the aesthetic appeal of its screenshots, and description. Our studies will also include a demographics survey in order to better assess the mechanisms underlying the connection. For instance, people may think a given application will be successful because they perceive it as more trustworthy or fun.

We make the following contributions:

- We establish a link between the way users feel about a given application measurement and the application's actual success.

- We deliver a novel approach to predicting the success of mobile applications.

RELATED WORK

Prior research has examined to a certain extent first impressions as it relates to the visual appeal of web pages. For instance, different cultures perceive the visual appeal of web pages in different ways [2]. Further, people from different groups see web pages' complexity and color saturations very differently even during the very first impression of such sites [2]. Our research aims to delve deeper into first impressions and how it relates to people perceiving the apparent future success of a mobile application.

Developers already have insights as to the importance of gauging success of their application and how first impressions might be important [5]. For example, application developers consider aspects such as the layout of their icons or how to deliver a consistent messages to users when developing an application. However, such insights have not been further developed. In addition, mobile application success has been discussed in marketing research in relation to the importance of icons, titles, descriptions, screen shots, keywords, and categories [1].

Similarly, web designers know that first impressions matter and users make such assessments within a very short amount of time [?]. Lindgaard [?] further mentions how aesthetics are often neglected in current studies on emotion and design even though emotional responses can be triggered much more quickly than rational ones. Our study will capitalize on this insight as we will examine how first impressions significantly impact people's emotional response to an application as underlying reasons for their belief that the application will be a success or not.

APPROACH

In order to tackle this problem we will perform the following:

- Control for difference in application cost by only using free applications

- Obtain approximately 500 mobile applications and 5000 participants

- Utilize the application store: Preference towards Androids since they publicly provide download statistics

- Use samples from games and productivity applications

- Incentivize users by making the study fun to complete and additionally taking advantage of users from Mechanical Turk to cover the remaining numbers required.

- Performing a quick survey for the first five users

- Display applications in different orders to weed out systematic preferences based on order.

- Utilizing apps with roughly the same distribution of dates of release

- Separating applications into two categories: (1) relatively new to the market, so users have not seen them before, and (2) been in the market for a while

- Displaying a mock-up of the application store listing (all must be the same except for the variable being tested)

- Scaping the the names, icons, and descriptions of the aforementioned applications from the Android store

We plan to conduct a survey across crowds that gauges their views on various aspects of web pages of applications. We control for differences in application cost by only examining free applications. We will scrape about 500 applications and get about 5000 participants to do the survey (Our sample must be big to offset random error.). We plan to use Android apps since its application marketplace publicly provides download statistics, albeit in discretized increments. We plan to examine a specific subset of apps: games + productivity app (The use of games is discretionary, so we must also examine something else that people need to use).

We will incentivize users by making the study fun to complete. If not enough users complete the study in this way, we will proceed to obtain some users via Mechanical Turk. setup: quick survey + first batch of 5 We plan to show applications in different orders to different people (to eliminate systematic biases). We will try to have roughly the same distribution of dates for when the applications were released. We plan to separate applications into 2 categories: (1) relatively new to the market, so users have not seen them before, and (2) been in the market for a while show mock-up of application store listing (all must be the same except for the variable being tested) if Android releases information on older applications. To obtain data, we plan to scrape the names, icons, and descriptions of the aforementioned applications.

EXPERIMENT

How good is your entrepreneurial gut? We will focus on gamification as an incentive. In addition, we will conduct a survey on application habits of consumers prior to the actual study. Our survey will consist of the following questions:

- How often do you use a smartphone?

- How often do you download apps?

- How often do you use apps?

- How old are you?

- What is your gender?

- Where are you from?

For the actual study, our questionnaire will ask subjects to rate applications based on the different qualities using a Likert scale:

- Does this pages feel fun?

- How clear does the page describe the apps purposes and functionalities?

- How useful do you think the application will be based on its icon?

Participants who have seen the application before will have their answers discarded.

Experiment design: description and 4 apps which app do you think is the most successful one? results given in groups of 5, then do you want to try again? next batch of 5

RESULTS
To be determined.

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