

# Predicting Mobile Application Success Based on First Impressions

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## ABSTRACT

This abstract is in construction.

## Author Keywords

Mobile Application; First Impression; Prediction

## ACM Classification Keywords

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

## INTRODUCTION

We are attempting to learn how much first impressions might impact the actual adoption of an Android game or productivity application. Mainly, we will examine what factors relevant to first impressions may contribute to the success of such apps. We plan to measure success through popularity (i.e. downloads, ratings). We hope to determine a good model for predicting application successes by examining observable measures for success of mobile applications on the Android Store.

Currently, app developers take substantial measures to gauge the success of their apps prior to release. Many release a beta version of their app to a restricted community before releasing the app to the public. This beta test allows the developers to not only debug the app, but also obtain an estimate of how much interest their apps will garner. Conducting a meaningful beta test requires a reliable and closed community of trustworthy individuals. Many large firms have this community on hand. For instance, before Google released its iOS application for its Maps service, it first released it to its thousands of employees. Google then got feedback from these employees as well as statistics such as how long individuals stayed on the app and how often they returned. However, small developers do not have such a substantial community of individuals at their disposal for beta testing. Often, these developers just publish their app and monitor metrics over time, adjusting along the way. Our tool would help these developers by offering valuable predictors of app success.

Additionally, developers often test specific facets of their app on their own through ads and crowdsourcing services. To test how well an icon performs relative to viable alternatives, app developers sometimes release several different ads on social media sites such as Facebook. Each of these ads would showcase a different candidate icon for an app. A common measure for how well an icon performs in these cases is click-through rate. Similar ideas are often applied to tag lines and descriptions of apps. Additionally, services such as Ikonica offer developers the opportunity to send potential icons to a crowd of online individuals and collect their feedback. Our tool would not only formalize such processes that test different facets of an app in a single tool, but also offer a cheaper method for gauging app success through utilizing the common sense of Turkers or potentially other crowds.

We posit that we can create a way of predicting the success of a game or productivity application without having the developer release an app and monitor metrics in the wild for a duration. We base our tool on the premise that certain factors such as how fun the page of an app appears and how much a viewers trust that page or the apps icon play a pivotal role in determining the games success.

Granted, many factors go into the success of game and productivity apps. Games, for instance, must be easily graspable at first, for instance. They must also become harder at a reasonable pace to keep the user engaged. Productivity apps must effectively meet concrete needs. We will be focusing on qualities pertaining to the page of an app, which matters in making strong first impressions.

We plan to leverage the common sense of crowds to gauge these facets and use this data to offer developers an estimate of the success of an app. We plan to develop a statistical model, perhaps based on regression from data gained from the crowd. To obtain data, we plan to scrape the names, icons, and descriptions of free game and productivity apps, so price does not bias one game over another. We plan to analyze Android apps since Android provides downloads statistics for apps albeit in a discretized manner.

Afterwards, we plan to develop a questionnaire that asks subjects to rate apps based on the different qualities on a Likert scale. These qualities could include how much subjects trust app pages, whether the pages feel fun, or how clear does the page describe the apps purposes and functionalities. We plan to gamify this process by challenging subjects to test their entrepreneurial gut. We also plan to have Turkers be subjects.

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We plan to scrape about 500 recent apps and will likely need several thousand, perhaps 5000 subjects.

To prevent biases, we should also ask users if they had seen the current app before asking them questions about it. We will likely discount users who have seen the app. Currently, we plan on just performing the analysis on recently loaded apps. We might also scrap apps that had been on the market for a while and compare the results between these two groups. We also plan on just scraping free apps so that price is not a confounding variable in our experiment. We should also ask subjects about their smartphone habits - are they familiar with smartphones and apps on them? Or have they never used a smart phone?

After obtaining this data, we plan to perform a regression to determine how much each quality matters in determining the success of game apps. We then plan to use this regression result as a tool to predict the success of other apps. We also plan to talk to Katharina Reinecke about how else we can interpret our results.

Our goal is to establish the link between the way people feel about given, observable measurements and the application's actual success, thus delivering a novel approach to predicting the success of mobile applications. We also plan to use this intuition to create a tool that allows users to cheaply predict the success of an application. Beyond software, we hope to determine what factors of the page of a game and productivity application that truly matter in determining the success of the app. This lasting piece of knowledge should benefit developers of games and productivity apps.

In other words, we intend to uncover the discrete, concrete elements that create subtle psychological influences in users and that propel users to download and use certain application versus others. Marketing is a very powerful tool; therefore, through uncovering the words, images, perceptions, and feelings that marketers have historically conveyed through their advertisements in the App Store and dissecting resulting users reactions to these subtleties, we can determine the elements that separate a mediocre from a successful marketing campaign.

## RELATED WORK

**Quantifying Visual Preferences around the World** This paper analyzes how people from different demographics react to how colorful web pages are. The experiment collected ratings of visual appeal from about forty thousand subjects on 430 web pages of varying complexities and colorfulness. The qualities that subjects performed ratings on include trustworthiness and of the web page. The experiment found that certain demographics such as Russians and Fins did not find colorful web pages as appealing as did demographics such as Macedonians. This paper relates to our work since we too seek to find factors that heighten appeal. Specifically, we seek factors that maximize the appeal of pages for game and productivity apps on the Android platform. Icon color could be one of the factors we analyze. We could also borrow off of many ideas from the methodology. For instance, the researchers motivated individuals to do their test by comparing

their results to other individuals at large. Our method for performing regression might be more complicated though since we analyze more factors than just one (say color saturation of a page). Overall, I enjoyed reading this paper. The results showed that most people preferred a moderate level of color saturation in web pages. I feel that some of the conclusions about specific demographics of people and their color preferences succumbed to a small amount of response bias though. In some countries, only a small portion of residents have access to the internet.

**The Business of iPhone App Development: Making and Marketing Apps that Succeed** By Dave Woolridge and Michael Schneider (2010) This book offered us some keen insights on how app developers currently gauge the success of their apps both after and before release. For instance, many services out there such as Mobclix provide rankings of apps based on download figures. App developers also read over the reviews of competitors to determine how well their services will be received. App developers also emphasize first impression a lot according to this book. For instance, they value the layout of their icons. Developers should also value communicating a consistent message to the user. From this book, we determined several factors that could heavily influence first impressions of app pages. I wished that the book discussed how crowd sourcing could help app developers gauge app success though. This book was written in 2010, and gaining knowledge from crowds was not as substantial of a concept back then.

**Predicting Users's First Impressions of Website Aesthetics With a Quantification of Perceived Visual Complexity and Colorfulness** This paper examined how different groups of people perceived web pages of varying complexity and color saturations. The experimenters asked 548 participants to rate 450 different websites on a number of metrics. What intrigued me most about this paper was how it used quantitative measures to ascertain such soft qualities as page complexity and colorfulness. Perceived colorfulness even depended on the context of the colors. The experimenters nicely used the sum of the average and the standard deviation of the saturations to measure perceived colorfulness. In our study, we will have to take similar measures. We are also trying to quantitatively gauge the effects of such soft qualities as trustworthiness and fun-ness of an app's page.

**Attention web designers: You have 50 milliseconds to make a good first impression** This paper examined how viewers of web pages really make their first impressions about a website within a very short amount of time. The paper emphasizes how aesthetics is often neglected in current studies on emotion and design. Apparently, emotional responses can be triggered much more quickly than rational ones. Humans are quick to assign words such as clean, symmetric, and dark to images. This article hence directly relates to our current studies since it discusses how first impressions can significantly impact people's emotional response to an app. Hence, we should ask users to rate their emotional responses to various apps and/or their icons. However, I feel that this paper also somewhat understates the importance of functionality. I

wish it could further examine how important this emotional response is. [?]

App Empire: Make Money, Have a Life, and Let Technology Work for You By Chad Mureta (2012) Since marketing plays such an essential role in the research we intend to pursue, we thought it best to examine literature related to mobile applications marketing research. In this book, Mureta highlights key insights regarding mobile application design and marketing which separate successful apps from non-successful ones. Using raw, forthright diction, Mureta acts as sort of a personal mentor to the reader, using words that convey a sort of familial bond that is greatly disarming, psychologically enticing, but more importantly packed with valuable tips for fellow application entrepreneurs. It is this direct, candid advice that we seek to capture. Furthermore, with his pointed market overviews that focus on mobile application usage and financial statistics and his instructional section on "Sex Appeal" in which he maintains a discourse on the importance of icons, titles, descriptions, screen shots, keywords, and categories, Mureta's work will endow us with the knowledge and references we need to augment our understanding of mobile application design and develop better, more informed hypotheses regarding what makes a mobile application successful. Finally, the reliability of Mureta's claims are backed by his own success in the mobile application industry. [?]

Mobile Marketing Research Priorities: Roadmap to Engaging the 'Connected Customer (2006) This article provides us with a better depth of understanding behind the theory of market research in the mobile application market. It hits upon several key concepts that will be important to incorporate and distinguish in our research. This work also discusses the current trends and the future of mobile application marketing examining such topics as response fulfillment, research and data collection, store traffic generation, advertising, and branding, which will provide clues towards uncovering the psychological impulses that cause users to select one application over the other. It is a reliable first-hand resource from an organization that specializes in understanding what people want.

## **APPROACH**

## **EXPERIMENT**

## **RESULTS**