國立政治大學資訊管理學(系)研究所

碩士學位論文

促進行動銀行應用程式下載率:線上傳統媒體與

社群媒體在網路行銷上相對效益的比較

Driving the Download Rate of Banking App: Comparing

the Relative Effectiveness of Online Traditional and Social

Media Marketing

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中 華 民 國 一〇九 年 七月

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ABSTRACT

In this mobile era, apps have become the main connection between companies and their consumers. The past research has revealed that 88.2 percent of people with smartphones use their smartphone for 2 hours and 58.5 minutes every day. The time even becomes 5 hours and 12.6 minutes among 18- to 19-year-old people, and more than 80 percent of this group are using social networks such as Facebook or YouTube. Popularizing apps through these channels is now a significant task that all companies should pursue.

This research aims to measure the effectiveness of traditional, socially owned, and socially earned online media on apps download in the context of mobile banking. We collected data from a leading Taiwanese bank about the click-through rates of online advertisements across different online channels and examined the influence on the app download rate. We will use a log-log model to test our model. This study emphasizes app marketing and will reveal which channels can promote downloads most effectively.

Keywords: app marketing, online marketing, banking app, social media marketing, synergy effect, marketing effectiveness

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CHAPTER 1: INTRODUCTION

Currently, banking services are no longer bound to taking place at the "bank" (Rossi &Tuunainen, 2004). Banks need to provide their services anywhere and anytime to their customers. These services include not only traditional banking services (e.g., deposit, loan, etc.) but also some immediate and situational services (e.g., small transfer, light investment, etc.). Therefore, mobile applications (apps) that can provide these kinds of brand-new and portable services become a great tool for banks to link their services to users because modern people rely heavily on smartphones. However, in addition to releasing apps, how to promote these apps has become a significant issue for every bank. The past literature has noticed challenges that e-bank marketing has faced. These challenges include the management of new channels to maintain relationships with customers (Hughes, 2016). Despite facing these challenges, banks are still holding many promotional events and trying to become the top choice to win this intense competition. However, it is difficult to decide an effective way to promote these services. Therefore, this research aims to compare the effectiveness of different marketing channels for promoting banking apps. We collaborated with a leading Taiwanese bank named First Bank. In addition, our choice of marketing channels were all online channels, which means that all of these marketing channels were processed through the Internet. In this Internet era, online media marketing can truly help brands maintain the loyalty of their customers (Shankar et al. 2003). On the other hand, online media marketing is a relatively low-cost way for a company to initially promote a new product or service (Edosomwan, 2011).

We divide these online media into three kinds: traditional (e-mail), socially owned (Facebook posts and Line messages), and socially earned media (anonymous forum,

blogs, and YouTube). Earned online media activity related to the company but the company's agent does not directly generate the content in it. Instead, they are generated by their customers or journalists on their SNS or online column (e.g., online word-of-mouth referrals, social media buzz, or online ratings and reviews). Owned online media activity is related to the company and is under the company's full control (e.g., the brand's own websites or fan pages) (Stephen &Galak, 2012; Lovett &Staelin, 2016). Some former studies have compared the effects of social media (Xie &Lee, 2015) or have compared online and offline media synergies (Naik &Peters, 2009). However, few studies have focused on the relative effectiveness of two different types of online media marketing in terms of traditional and social media. Furthermore, banking apps are now significant for banks to offer their services to their customers (Al-Jabri &Sohail, 2012). Improving the download rate of a banking app can help a bank attract more customers. In this research, we will compare all three types of online media and focus on the download rate of a new app rather than on purchasing intention or new website log-ins.

In this study, we focus on online promotion effectiveness. E-mail is considered traditional online marketing. E-mail can reach customers individually and directly. The bank can exactly grasp the list of names of the promotion's target audience so that it can measure the loyalty of its own customers directly. In addition to e-mail marketing, the bank also conducts online social media marketing through earned and owned channels. For owned social media, banks use Facebook fan pages and Line business accounts as their major marketing channels. Facebook is still the most popular social network, with more than 19 million active users per month in Taiwan (Digital 2019 Taiwan (January 2019) 2019). Post information about new products on the homepage have become a necessary effort for every company in Taiwan (Lin, 2016). Line was originally developed for communication between people and is the dominant

communication software in Taiwan, with a use rate of over 91.3 percent among the Taiwanese (Business Next, 2018). In addition to Line's communication function, many companies create an official account for consumers to add and will push messages to them. The content mostly includes notifications, information of the events, and product promotion. This is also a way to connect with consumers directly and has been adopted by a wide range of companies as a brand-new means of promotion in Taiwan ("SmartM, 2017). As for earned social media, though a bank cannot control what people say about its app, it is helpful for enhancing exposure if the people write and share their comments. We collected the data from PTT, the largest anonymous forum in Taiwan, blogs, and YouTube. PTT, like Reddit and 5channel, gathers information on every topic that people are interested in. With more than 1.5 million users and once having 150 thousand users online at the same time, PTT represents what people think and feel about everything in society (Business Next, 2016). New apps are not excluded. In addition to forums, some bloggers or YouTubers may introduce what is new for banks and compare every product that the banks release. Their comments can also influence the bank's reputation. How these earned social media can influence the app's download rate is what we are concerned with her. Our research questions are as follows:

1. Which media help banks connect to more customers and obtain the highest download rate?

2. What large synergetic effects can online media marketing bring?

The results of this research can help banks know how to promote their new apps more effectively and at a relatively lower cost and connect to more new customers.

CHAPTER 2: LITERATURE REVIEW

2.1. Mobile App Marketing

Mobile apps are defined as software packages installed and run by users' mobile devices (Yan et al. 2013). Mobile apps provide diverse values to consumers, such as content delivery value, transaction value, location-based value, emergency assistance value, and entertainment value (Mahatanankoon et al. 2005). Due to the rapid growth of the mobile apps market, many mobile entrepreneurs are developing their apps and promoting the apps to customers. However, finding ways to convince users to try these apps can pose a daunting challenge for developers. Although mobile marketing, which is an always-with-the-consumer characteristic, is location sensitive, and provides the ability to send consumers relevant personalized messages, is now a trend and has become a major marketing approach, many companies still fail to use it effectively (Berman &Zarb 2016). Prior research has explored approaches to be used in developing effective mobile app marketing. For example, Sanders (2015) has suggested that the design of the advertisement should fit the mobile device. Using the same design for both the PC and smartphones will confuse users and cause them to waste nearly 25% more time when viewing sites (Sanders, 2015). Ease of use is also an important attribute that marketers should keep in mind. Optimizations should include easy-to-use functionality and faster loading speeds to keep user experiences free of obstacles (Berman &Zarb, 2016). Furthermore, marketers should motivate consumers to use their products within their advertisements, for example, by presenting consumers with a statement of the privacy policy (Watson et al. 2013) or by presenting consumers with coupons and other special offers (Berman &Zarb, 2016).

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Successful mobile app marketing also depends on how customers perceive the value of the app with respect to such characteristics as perceived enjoyment, usefulness, and ease of use (Yang, 2013). In addition, the brand relationship between consumers and brands can also affect the effectiveness of mobile app marketing. For example, Kim et al. (2013) found that brand attachments tended to enhance brand supportive behaviors when they conducted an examination of the relationship between consumers' attachments to smartphone apps and their brand supportive behaviors. These findings were confirmed by the survey conducted by Peng et al. (2014). Peng et al. surveyed 245 participants recruited from online app market forums and communities in Taiwan to observe if a positive correlation existed between a consumer's relationship with a brand and his/her intention to use the brand app. The results of this experiment strongly supported their model, which suggests that the promotion of a brand image can increase consumers' willingness to use brand apps. Moreover, past literature has found that fulfilling consumers' psychological needs can successfully drive mobile application engagement. For example, Fang et al. (2017) has indicated that providing pleasant experiences and helping consumers' social interactions are both helpful in driving engagement for the travel apps they have surveyed. Apart from mobile apps, companies should also consider where their target users are from and what cultures these users are embedded in (Lim et al. 2015).

Despite the fact that many papers have studied ways to make mobile app marketing more effective and to enhance consumers' willingness to adopt these apps, no such literature has explored which advertising channels are most effective in promoting mobile applications. The next paragraph will introduce some example discussions regarding marketing channel selection.

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2.2. Marketing channel selection

Some literature discusses the effectiveness of social media in promoting new services. For example, Sajid (2016) described social media as the best possible avenue available for exposing products to potential customers upon observing the market situation (Sajid SI, 2016). Some studies have also examined banner advertising on websites. For example, Hervet et al. (2011) investigated eye movements to prove that banner blindness may not be a problem when advertisers place banner advertisements on their website pages. Although there are some limitations involved when using banners as an advertising method, in certain situations, banners can still capture visitors' attention long enough to create implicit memories about the ad's content, such as the brand being promoted in the banner.

Different channels will attract different customers. Kollmann et al. (2012) developed a model to explain how the use of online and offline channels may lead not only to synergy but to cannibalization. They collected data from a large mobile networks operator and then conducted an analysis to see if multichannel advertising approaches can truly bring synergy to a company. This research found that online channels tended to attract customers who value convenience as the most important factor in seeking out information through advertising and who are not afraid of the risk brought about by the security loophole introduced by such channels.

In summary, although the selection of online marketing channels has been explored in prior research, few researchers have discussed this issue with respect to the mobile apps market. Moreover, few data directly show how many customers tend to be attracted by these various marketing channels. In this study, we will use the app download rate as an outcome variable that directly reflects the effectiveness of various

marketing channels. Furthermore, we will distinguish between three distinct types of online marketing channels: traditional, social owned, and social earned; all of these channels will be discussed further in the next section.

2.3. Online traditional and social media

While marketing channels can be classified into traditional, owned, and earned online media, past literature has examined how these media channels affect brand image. For example, Xie and Lee (2015) revealed that a brand's activities on earned and owned social media has the ability to enhance customers' purchase intentions with respect to the brand. Their analysis showed that, though both types of messages can improve customers' consumption motivation, earned social media activities tend to result in more purchases. Lovett and Staelin (2016) collected user viewing habits for part of a TV series and analyzed how earned, owned, and paid media affect users' viewing choices. They conducted a survey and asked respondents if they were exposed to any advertisements (paid media), read any relevant content on social networks (earned media), or obtained information from the network website (owned media). The results showed that, given the same level of exposure, earned media contribute far more than the remaining types of media to users' live viewing choices and slightly more to their overall viewing choices. However, paid media still plays an important role in building brand image due to the relative lack of scale limitations imposed by this channel (Lovett &Staelin, 2016). The results from these two independent lines of research both indicate that earned media has the ability to positively affect customers' attitudes toward a company in a fairly efficient manner. In our research, we explore whether this phenomenon is still present when the media in question are online media and when the promotion target is a mobile application.

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Dong et al. (2018) compared the effectiveness of multimedia messaging to that of messaging in a single medium. In their experiment, they exposed participants to two online information stimuli and then tested participants' attitudes toward the two contexts of online multimedia synergy or online media repetition. Their results showed that multimedia approaches tend to lead to higher source and brand credibility. In addition, multimedia approaches also tend to make consumers have more positive thoughts and attitudes toward the brand. Moreover, such multimedia approaches also tend to generate greater purchase intentions in those customers exposed to them. We will also test to see if good synergies exist between online traditional media and social media in the mobile app market or if competition between these two channels tends to lead to cannibalization.

CHAPTER 3: RESEARCH MODEL

3.1. Conceptual framework

We develop a framework to express how different forms of advertising (email and online social) indirectly affect the number of app downloads through users' interactions with landing pages (click-throughs). Figure 1 shows the process the viewer of an advertisement will go through to download our app. On the left side are the three types of channels used to deliver our promotions – traditional online media (email), online owned social media, and online earned social media. On the right side are number of app downloads. The middle of the framework is the landing page that routes the information viewer to download the app. The landing page presents users with two tasks: an online account opening task and a mobile app download task. The key is to understand how clicks arising from different forms of online advertising can be translated into account openings and how app downloads take place after viewers accomplish the task of opening an account. Specifically, we consider three different click-throughs (click-throughs = impressions * click-through rate). The first click-through occurs when a viewer clicks on an online advertisement that routes the viewer to the landing page. The second click-through occurs when a viewer clicks on a link from the landing page that routes the viewer to an account opening page, and the third click-through occurs when a viewer clicks on a link from the account opening page that routes the viewer to an app download page.

Our study investigates the relationship between click-throughs from online media pages and those from the landing page. We establish our hypotheses as follows:

H1: Advertising via online social media will be more effective than advertising

via traditional online media.

As we previously mentioned, social media now provides the best advertising opportunities for companies introducing new products. Erdogmus (2012) also showed that social media marketing can help companies maintain brand loyalty. In this era of social media marketing, we think that social media will perform better than traditional online media.

H2: Advertising via social earned media will be more effective than advertising via social owned media.

Prior research, such as that of Xie and Lee (2015) and Lovett and Staelin (2016), has shown that promotions disseminated over earned media tend to perform better than promotions disseminated over owned media. We think this result will still hold when the promotion target becomes a mobile application.

H3: There will be synergy effects across different online media.

As the results of Dong et al. (2018) show, online multimedia approaches to advertising tend to be more effective than approaches using only a single medium. In our opinion, if First Bank promotes their app across several types of media and connects to different types of customers by doing so, their app will gain recognition more quickly and more easily.

This framework provides us with a way to clarify the effects of the advertising. Our conceptual model clearly shows the procedure viewers will follow. After first being attracted by the relevant advertisements and clicking on the links embedded in them, viewers will be directed to an account opening page. If viewers then complete the steps required to open an account, they will be given a recommendation to use the mobile banking app, and a download link to the app will be provided to them.

Downloading the app will be the last step of this procedure. However, viewers may choose to exit/quit this process at any step during the abovementioned procedure, so click through rates must be measured carefully at each step.

We define the number of traditional, social owned, and social earned clicks to be our key independent variables used to study the effects of the advertisements presented. We define our dependent variables to be the click through rates from the landing page and the account opening page, as well as the number of app downloads.
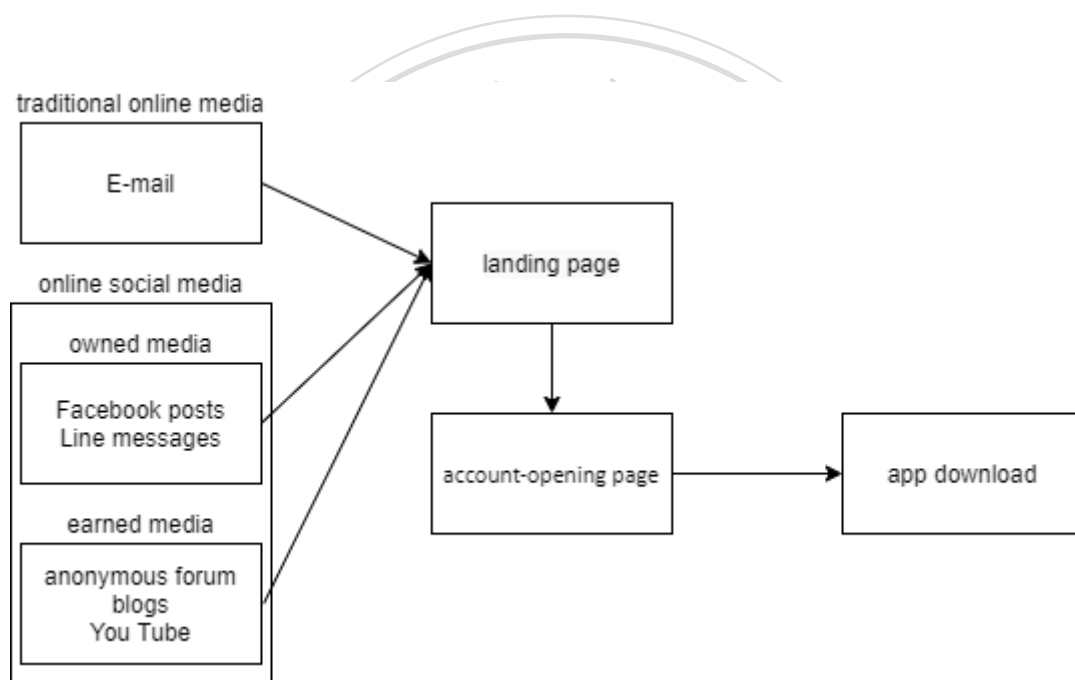
Figure 2.

THE CLICK-THROUGH PROCESS OF THE ADVERTISEMENT USER FOR THE CROSS-CHANNEL EFFECTS OF ONLINE TRADITIONAL AND SOCIAL MEDIA ON APP DOWNLOADS

The control variables of our study are the number of traditional, social owned, and social earned promotions presented by the bank over a given time period. We use these variables to account for the amount of promotion the bank has engaged in during each time period. These control variables help us to better understand the fluctuations of the app download rate during the study period.

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3.2 Model development

Our model contains three dependent variables – landing page click-throughs, account opening page click throughs, and app downloads. We use the log-log model to allow us to interpret the coefficients we find as elasticities. We use the ADStock – the cumulative value of a brand's advertising at a given point in time – to gauge the long-term effect of each advertising medium on each dependent variable. Due to the different durations of promotions launched across different types of media, we calculate synergy effects only for online social media. Descriptions of the variables we used in our model are shown in Table 1.

Table 1. Variable Operationalizations

Variable	Operationalization
LandingPageClick$_t$	The aggregate number of clicks on the landing page on day t.
AccountOpeningClick$_t$	The aggregate number of clicks on the final page of the account-opening process on day t.
AppDownload$_t$	The aggregate number of app downloads on day t.
TraditionalPromotion$_t$	The number of emails sent on day t.
SocialOwnedPromotion$_t$	The number of the Facebook posts and Line messages on day t.
SocialEarnedPromotion$_t$	The number of posts on anonymous forums, and blogs, and the number of videos uploaded by youtubers on day t.
TraditionalClick$_t$	The aggregate number of clicks on e-mails on day t.

SocialOwnedClick$_t$	The aggregate number of clicks on Facebook posts and Line messages on day t.
SocialEarnedClick$_t$	Aggregate number of clicks on any online anonymous forum, blog, or YouTube channel on day t.

The model equations are as follow:

(1) InLandingPageClick $= \beta_{1,0} + \beta_{1,1}$TraditionalADStock$_t$

$$+ \beta_{1,2}\, \text{SocialOwnedADStock}_t$$

$$+ \beta_{1,3}\, \text{SocialEarnedADStock}_t$$

$$+ \beta_{1,4}\, \text{TraditionalPromotion}_t$$

$$+ \beta_{1,5}\, \text{SocialOwnedPromotion}_t$$

$$+ \beta_{1,6}\, \text{SocialEarnedPromotion}_t$$

$$+ \beta_{1,7}\qquad \text{SocialOwnedADStock}_t *$$

$$\text{SocialEarnedADStock}_t$$

$$+ u_{1,t};$$

(2) InAccountOpeningClick $= \beta_{2,0} + \beta_{2,1}$TraditionalADStock$_t$

$$+ \beta_{2,2}\, \text{SocialOwnedADStock}_t$$

$$+ \beta_{2,3}\, \text{SocialEarnedADStock}_t$$

$$+ \beta_{2,4}\, \text{TraditionalPromotion}_t$$

$$+ \beta_{2,5}\, \text{SocialOwnedPromotion}_t$$

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$$+ \beta_{2,6} SocialEarnedPromotion_t$$

$$+ \beta_{2,7} LandingPageClickStock_t$$

$$+ \beta_{2,8} \quad SocialOwnedADStock_t *$$

$$SocialEarnedADStock_t$$

$$+ u_{2,t}$$

(3) $InAppDownload = \beta_{3,0} + \beta_{3,1} TraditionalADStock_t$

$$+ \beta_{3,2} SocialOwnedADStock_t$$

$$+ \beta_{3,3} SocialEarnedADStock_t$$

$$+ \beta_{3,4} TraditionalPromotion_t$$

$$+ \beta_{3,5} SocialOwnedPromotion_t$$

$$+ \beta_{3,6} SocialEarnedPromotion_t$$

$$+ \beta_{3,7} LandingPageClickStock_t$$

$$+ \beta_{3,8} AccountOpeningClickStock_t$$

$$+ \beta_{3,9} \quad SocialOwnedADStock_t *$$

$$SocialEarnedADStock_t$$

$$+ u_{3,t},$$

The stock variables are defined as follows using the below equations to help us weigh the influence of advertisements from the previous period more clearly (Danaher et al. 2008):

(4) $TraditionalADStock_t \quad = \quad \lambda_{Traditional} TraditionalADStock_{t-1} \quad + \quad (1 - \lambda_{Traditional}) \ln(TraditionalClick_t + 1),$

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(5) $\text{SocialOwnedADStock}_t = \lambda_{\text{SocialOwned}}\text{SocialOwnedADStock}_{t-1} + (1 - \lambda_{\text{SocialOwned}})\ln(\text{SocialOwnedClick}_t + 1),$

(6) $\text{SocialEarnedADStock}_t = \lambda_{\text{SocialEarned}}\text{SocialEarnedADStock}_{t-1} + (1 - \lambda_{\text{SocialEarned}})\ln(\text{SocialEarnedClick}_t + 1),$

(7) $\text{LandingPageClickStock}_t = \lambda_{\text{LandingPageClick}}\text{LandingPageClickStock}_{t-1} + (1 - \lambda_{\text{LandingPageClick}})\ln(\text{LandingPageClick}_t + 1),$ and

(8) $\text{AccountOpeningClickStock}_t = \lambda_{\text{AccountOpeningClick}}\text{AccountOpeningClickStock}_{t-1} + (1 - \lambda_{\text{AccountOpeningClick}})\ln(\text{AccountOpeningClick}_t + 1)$

where $\text{TraditionalClick}_t$ is the aggregate number of clicks on e-mails on day t, $\text{SocialOwnedClick}_t$ is the aggregate number of clicks on Facebook posts and Line messages on day t, $\text{SocialEarnedClick}_t$ is the aggregate number of clicks on any online anonymous forum, blog, or YouTube channel on day t, $\text{LandingPageClick}_t$ represents the aggregate number of clicks from the landing page on day t, and $\text{AccountOpeningClick}_t$ is the aggregate number of clicks that finish the account-opening process on day t. We add 1 to our log terms to avoid having a zero value for any of these terms. The term $\beta_{i,j}$ is the long-term click elasticity for medium j, dependent variable i, and $(1-\lambda_j)\ \beta_{i,j}$ is the short-term click elasticity for the same medium and dependent variable (Dinner et al. 2014). We determine the value of λ by varying λ upward from 0.1 in increments of 0.1 and settling on the value for λ that results in the smallest sum of squared residuals (Danaher et al. 2008).

This model measures the impact made by traditional, social, and earned online media and can help us to determine which of these media does the best job of attracting viewers to become users of the banking app being promoted.

CHAPTER 4: DATA COLLECTION

4.1 Case description

We collected marketing data from First Bank in Taiwan. First Bank released a new

banking app, iLEO, in February 2019, featuring a cute interface and simple operation,

in an attempt to attract more young people between the ages of 20 and 30 years old to

do business with the bank. iLEO was combined with and promoted as part of a digital

account service offered by First Bank. As part of the campaign, First Bank started an

event in cooperation with Starbucks and sent e-mails to their customers. Beginning in

August 2019, First Bank posted several different pieces of information on its

Facebook fan page and messaged on Line. In addition, at various times after the

release of the service, people on anonymous forums, bloggers, and YouTubers also

shared their comments or compared the First Bank service with those of other banks.

Below are some examples of the advertisements used.

(a) Facebook Post: Promoting iLEO's mutual fund purchase functionality. Users need an initial deposit of only 1000 NTD to start investing.

(b) Line Message: Promoting the digital account service and its foreign exchange purchase functionality.

Figure 2. Facebook Post from Oct. 15, 2019 and Line Message from Aug. 2, 2019

People discuss iLEO and share information about the discounts that current app users can get if they recommend the app to new users.

Figure 3. Discussion Thread on PTT from Oct. 3, 2019

A blogger shared positive feedback about the credit card offered with the digital account.

Figure 4. Blog Post from Nov. 11, 2019

After clicking the links provided by First Bank, users will be directed to the following landing page:

The main content of this page includes a description of the benefits of the digital account, such as free interbank transfers and withdrawals, a low-threshold minimum funding requirement, and high-interest savings accounts. The bottom of the page is a link to the account-opening process.

Figure 5. The Landing Page of The Digital Account

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The process of opening an account begins next:

This page directs customers to fill in their personal information. On this page, users opening an account need to fill in their Chinese name, ID number, and birthday; verify their bank account and their bank account's associated phone number; indicate which branch they prefer for their account; and check the relevant terms.

Figure 6. Screenshot of One of the Account-Opening Processes

The main content of this page includes a description of the App – iLeo, indicating that the App is easy and convenient to use, is innovative, and knows what users want.

Figure 7. Screenshot of the App-Download Page

After customers fill out all of the forms, they are asked if they want to download the iLEO app and are directed to Google Play or another app store, where they can then finish the download process.

4.2 Data description

We collected data resulting from the presentation of advertisements in traditional owned media, social owned media, and social earned media. To begin, we chose email as the form of traditional owned media to be used in our study. We collected the data resulting from 12 emails sent by First Bank on 7/2, 7/4, 7/9, 7/15, and 7/16 in 2019. These emails were sent at irregular times. We collected the number of clicks generated by each addressee, starting on July 2, 2019, and ending on July 27, 2019. In the case of social owned media, we chose Facebook and Line as our research targets. Following the email promotion, 6 posts were made on the bank's Facebook fan page and 5 advertising messages were sent using the bank's Line business account. The Facebook posts were posted on 10/5, 11/12, and 12/3 in 2019 and on 1/8, 2/14, and 3/16 in 2020. The Line messages were sent on 10/5, 11/7, and 12/3 in 2019 and on 2/17 and 3/16 in 2020. We collected the number of clicks on the link to the First Bank landing page generated across these media during the period from 10/5/2019 to 3/29/2020. Finally, with respect to social earned media, we collected click data from blogs, YouTube, and Ptt, which is the biggest anonymous forum in Taiwan. However, there were no new posts about iLEO on Ptt during the period we examined. The latest post on Ptt with a link to the First Bank landing page was posted on 10/3/2019. However, we wanted to compare Ptt with other media, we chose to include clicks from the Ptt post during this earlier period in our research target. With respect to the blogs used in our study, we collected from three distinct blogs – from one called savingmoneyforgood, from another called beurlife, and finally, from a blog known as pixnet. We also collected click data from these blogs during the period from 10/5/2019 to 3/29/2020. In all, we collected 177 data records from these two social media sources. During the above data collection period, a total of 9 articles containing a link to the First Bank landing page

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were posted. These articles were posted on 10/25 and 12/30 in 2019 and on 1/10, 2/1, 2/08, 2/11, 2/13, 3/17, and 3/25 in 2020. Below are the descriptive statistics for the click data we collected. The following data are rounded to the second decimal place.

Table 2. Descriptive Statistics

Variable	N	M	SD
Clicks on the links in e-mails from 7/2/2019 – 7/27/2019	10652	409.69/day	633.58
Clicks on the links on Facebook from 10/5/2019 - 3/29/2020	4687	26.48/day	115.35
Clicks on the links on Line from 10/5/2019 - 3/29/2020	48239	272.54/day	1275.61
Clicks on the links on Ptt from 10/5/2019 – 3/29/2020	650	3.67/day	11.22
Clicks on the links on YouTube from 10/5/2019 – 3/29/2020	6844	38.67/day	68.60
Clicks on the links in blogs from 10/5/2019 – 3/29/2020	29957	169.25/day	203.68
Clicks on the landing page from 7/2/2019 - 7/27/2019	461	17.73/day	16.55
Clicks on the landing page from 10/5/2019 - 3/29/2020	5101	28.82/day	20.66
Clicks on the account-opening page from 7/2/2019 - 7/27/2019	1321	50.81/day	24.16
Clicks on the account-opening page from 10/5/2019 - 3/29/2020	32545	183.87/day	109.01
Number of App downloads from 7/2/2019 – 7/27/2019	6220	239.23/day	132.10
Number of App downloads from 10/5/2019 – 3/29/2020	76696	433.31/day	197.71
Number of e-mails sent from 7/2/2019 – 7/27/2019	12	0.46/day	1.22
Number of Facebook posts from 10/5/2019 - 3/29/2020	6	0.03/day	0.18
Numbers of Line messages from 10/5/2019 - 3/29/2020	5	0.03/day	0.17
Number of Ptt posts from 10/5/2019 - 3/29/2020	0	0	0
Number of YouTube videos from 10/5/2019 –	3	0.02/day	0.13

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3/29/2020			
Number of blog posts from 10/5/2019 – 3/29/2020	9	0.06/day	0.23

CHAPTER 5: MODEL ANALYSIS AND RESULTS

5.1 The Model of Landing Page Clicks

Table 3 shows the results of the landing-page-click model. The model shows that Line clicks and YouTube clicks have strong and positive associations with the number of landing-page clicks, as expected (b = .161, p = .024; b = 1.688, p = .050). In addition, we find that both e-mail and YouTube promotions have strong and positive effects on the number of landing-page clicks (b = .137, p = .058; b = .145, p = .050), indicating that promotions on these two channels are effective in attracting people to click on links to the landing page to start the account opening process. However, promotions delivered via blogs had a negative effect on the number of landing-page clicks (b = -.138, p = .062). Such a result may indicate that people dislike the advertisements presented on the blogs.

Table 3. Model Results For Landing-Page Clicks

Dependent Variable:	Landing Page Clicks		
	β	t	p-Value
Traditional			
E-mail	.031	.399	.690
Social Owned			
Facebook	-.107	-1.120	.264
Line	.186	2.267	.024**
Social Earned			
Ptt	.055	.571	.569
YouTube	.200	1.974	.050**
Blogs	.090	.860	.391
Promotion			
Traditional	.137	1.911	.058*
Facebook	.061	.740	.460
Line	.032	.377	.706

YouTube	.145	1.974	.050**
Blogs	-.138	-1.880	.062*
Number of observations		203	
R^2		.064	

5.2 The Model of Account-Opening Clicks

Table 4 shows the results of the account-opening-click model. Similar to the results of the landing-page-click model, Line clicks and YouTube clicks have strong and positive effects on the number of account-opening clicks (b = .136, p = .001; b = .186, p = .026), suggesting that Line ads and YouTube ads stimulate customers to recognize a need for the product, thereby making customers more willing to explore the product information provided by the bank. We also find that both Facebook and blog promotions show strong and positive effects on the number of account-opening clicks (b = .071, p = .034; b = .121, p = .052), suggesting that once a Facebook or blog promotion brings a client to the account-opening process, the client is more likely to complete the process of opening an account. It is interesting to note that viewers tend not to click on either Facebook ads or blog ads; however, promotions delivered via both of these channels do have a positive effect on the number of account-opening clicks observed during the promotion period. Although people may tend not to click on advertisements presented on Facebook or in blogs, these advertisements still seem to trigger viewers to search for more information about the app, which in turn leads to more app downloads.

Table 4. Model Result For Account-Opening Clicks

Dependent Variable:	Account-opening click		
	β	t	p-Value
Traditional			
E-mail	-.042	-.640	.523

Social Owned			
Facebook	-.044	-.550	.583
Line	.231	3.316	.001***
Social Earned			
Ptt	-.037	-.456	.649
YouTube	.191	2.239	.026**
Blogs	.067	.754	.451
Promotion			
Traditional	.004	.061	.951
Facebook	.071	1.030	.034**
Line	.047	.660	.510
YouTube	-.004	-.067	.947
Blogs	.121	1.954	.052*
Number of observations		203	
R^2		.341	

5.3 App-Download Model

Table 5 shows how advertising on different channels affects the number of app-downloads. Traditional e-mail advertising has a positive and strong association (b = .065, p=.003) with the number of app downloads. Social owned media, in terms of Facebook posts and Line messages, also have strong and positive effects (b = .103, p = .058; b = .078, p = .001) on the number of app-downloads, though Line messages have a greater impact than do Facebook posts. With respect to social earned media, promotions on YouTube have strong and positive associations (b = .148, p = .002) with the number of app-downloads. However, Ptt posts have a strong and negative association (b = -.093, p = .003) with the number of app-downloads, possibly because the anonymity of posts on Ptt makes people distrust the information about the app that they receive via this channel, thus resulting in the negative impact on app downloads observed for Ptt posts. With the exceptions of Line and YouTube, other channels are

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not significantly associated with the click-through process but are still associated with app-downloads. Such a finding may occur because the process of opening an account is more complex than the process of downloading the app. Thus, users may prefer to download the app directly, instead of doing so indirectly after completing the account-opening process presented on the account-opening page. Of all the channels studied, results show that YouTube has the greatest impact on App downloads, followed by Line, Email, and Facebook. In addition, with the exception of blog promotions (b = .097, p = .100), none of the other promotions are significantly associated with app downloads. Such a finding suggests that people tend not to click on links given by bloggers immediately after reading an article, but instead, are prompted by blog articles to search for more information about the app and then decide whether to download the app or not. People may pay more attention to blog promotions because these promotions usually introduce more information about the app than do other types of promotions, which in turn, tends to arouse users' interest in exploring the app.

Table 5. Model Results For App-Downloads

Dependent Variable:	App download		
	β	t	p-Value
Traditional			
E-mail	.187	3.057	.003***
Social Owned			
Facebook	.146	1.904	.058*
Line	.222	3.379	.001***
Social Earned			
Ptt	-.260	-2.974	.003***
YouTube	.253	3.097	.002***
Blogs	-.158	-1.591	.113
Promotion			
Traditional	-.042	-.731	.466
Facebook	.021	.322	.748
Line	.011	.169	.866
YouTube	-.051	-.863	.389
Blogs	.097	1.654	.100*
Number of observations		203	
R^2		.414	

5.4 Channels' Synergy Effects

To avoid the problem of multicollinearity, we apply the mean-centering method to our data. Table 6 shows that there is a positive and strong synergy effect between social owned and earned media for app downloads (β = .946, p = .000). People are more willing to download the app when seeing the information provided by both the official channel (owned media) and a private one (earned media). Such a finding suggests that using a single medium to promote our product may not be an effective marketing approach; as an alternative, placing information on multiple media channels will tend to increase people's interest in our product and to attract more people to download the app.

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Table 6. Model Result For App-Download With Synergy

Dependent Variable:	App download		
	β	t	p-Value
Traditional	.054	.870	.385
Social Owned (mean centering)	.125	2.184	.033**
Social Earned (mean centering)	.024	.232	.817
Social Owned* Social Earned (mean centering)	.946	6.957	.000***
Promotion			
Traditional	-.124	-2.224	.027**
Social Owned	.033	.602	.548
Social Earned	-.038	-.686	.494
Number of observations		203	
R^2		.403	

5.5 Carryover Effects

Table 7 shows the carryover coefficients for the 6 types of media studied. The 90% duration interval is estimated by the equation: 90% duration interval = $\ln(1-.90)/\ln(\lambda)$(Leone, 1995). From this table, we can see that E-mail, Facebook, Line, and YouTube all have relatively strong carryover effects, which means that these media enhance people's interest for a longer period of time. Contrastingly, the effects of Ptt and blogs tend to be more immediate. Thus, advertisements delivered via these latter two channels tend to prompt people to download the app sooner, rather than a few days later.

Table 7. Advertising Carryover Coefficients and Duration Intervals

	λ	90% Duration Interval (Days)
Traditional		
E-mail	0.9	22
Social Owned		
Facebook	0.9	22

Line	0.9	22
Social Earned		
Ptt	0.1	1
YouTube	0.9	22
Blogs	0.1	1

5.6 Summary

The results of our analysis demonstrate how different media affect consumers' willingness to download a new banking app. According to Table 6, social owned and social earned media have strong synergy effects, which leads to more app downloads when advertising via both of these types of media together as opposed to when advertising via traditional online media, supporting Hypotheses 1 and 3. However, advertising via social owned media had more significant effects on app downloads than did advertising via social earned media (Table 6); thus, Hypothesis 2 is rejected. In addition, Table 5 shows that Line clicks are most significantly related with app downloads, followed by YouTube clicks. Moreover, although blog clicks are not significantly associated with app downloads, promotions on blogs are associated. Furthermore, traditional email promotions have a negative effect on the number of app downloads (Table 6).

CHAPTER 6: CONCLUSION

Due to growth in the usage of mobile devices, finding an effective way to promote mobile apps will become increasingly important in the near future. However, banking apps are usually thought to be quite functional but fairly unattractive. People often use these apps only because they have accounts with a given bank. Therefore, it is reasonable to assume that banks may attract more clients if they have a more attractive banking app. In this study, we examined the effects of promotions for a new banking app that were delivered via different online media, including traditional, social earned, and social owned online media, using data provided by First Bank. We used a log-log model to calculate the elasticity coefficient for each type of medium. Our model shows the effect of different media on each step of the account-opening and app-download process. We use ADStock to examine the effects of each medium. Our findings indicate that using Line and YouTube as advertising channels tends to be most effective in promoting our new banking app. In addition, there are synergy effects between social owned media and social earned media with respect to the number of app downloads achieved. We succeeded in determining which online media channels are recommended when promoting a new banking app, and we also proved that our model is suitable for modeling this type of promotion. In addition, we also found that some channels commonly used by many enterprises in their advertising campaigns may surprisingly lead to negative effects in the promotion of their products. The results of our study allow us to better advise banks in choosing the most effective advertising channels to use when promoting a new app.

This research has limitations. First, we have collected data from only one bank.

Therefore, we cannot guarantee that these media would have the same effect for promotions launched by other banks due to differences in company image or differences in the conditions surrounding social media management that may be found at other banks. In addition, we considered only a limited number of social media channels in this study, while other popular social media channels, such as Instagram, were not included in our model. Moreover, our analysis was performed in efforts to examine how promotions affected the number of app downloads; however, the promotions in this research bind the app download process with a digital account-opening process. If the promotions in our study had tried to increase the number of app-downloads more directly, the results of this research may have been very different. Furthermore, with respect to the synergy effects uncovered in our research, due to the different durations and deployment windows of various promotions, we were unable to examine the synergy effects between traditional and social media in this study. The study of such synergy effects is left for future research.

REFERENCES

Al-Jabri, I. M., &Sohail, M. S. (2012). MOBILE BANKING ADOPTION: APPLICATION OF DIFFUSION OF INNOVATION THEORY. In *Journal of Electronic Commerce Research* (Vol. 13).

Berman, B., &Zarb, F. G. (2016). *Planning and implementing effective mobile marketing programs*. https://doi.org/10.1016/j.bushor.2016.03.006

Danaher, P. J., Bonfrer, A., &Dhar, S. (2008). The Effect of Competitive Advertising Interference on Sales for Packaged Goods. *Journal of Marketing Research*, *45*(2), 211–225. https://doi.org/10.1509/jmkr.45.2.211

Digital 2019 Taiwan (January 2019) v01. (n.d.). Retrieved January5, 2020, from https://www.slideshare.net/DataReportal/digital-2019-taiwan-january-2019-v01

Dinner, I. M., VanHeerde, H. J., &Neslin, S. A. (2014). Driving online and offline sales: The cross-channel effects of traditional, online display, and paid search advertising. *Journal of Marketing Research*, *51*(5), 527–545. https://doi.org/10.1509/jmr.11.0466

Dong, X., Chang, Y., Liang, S., &Fan, X. (2018). How online media synergy influences consumers' purchase intention: A perspective from broadcast and interactive media. *Internet Research*, *28*(4), 946–964. https://doi.org/10.1108/IntR-08-2017-0298

Edosomwan, S. O. (2011). The history of social media and its impact on business. In *Article in The Journal of Applied Management & Entrepreneurship*. Retrieved from https://www.researchgate.net/publication/303216233

Erdogmus, I. E. (2012). *The Impact of Social Media Marketing on Brand Loyalty The impact of social media marketing on brand loyalty*. (September 2014). https://doi.org/10.1016/j.sbspro.2012.09.1119

Hervet, G., Guérard, K., Tremblay, S., &Chtourou, M. S. (2011). Is banner blindness genuine? Eye tracking internet text advertising. *Applied Cognitive Psychology*, *25*(5), 708–716. https://doi.org/10.1002/acp.1742

Hughes, T. (2016). *Marketing Challenges in E-Banking : Standalone or Integrated ? Marketing Challenges in E-Banking : 1376*(April). https://doi.org/10.1080/0267257X.2003.9728251

Leone, R. P. (1995). Generalizing What Is Known About Temporal Aggregation and Advertising Carryover. *Marketing Science*, *14*(3_supplement), G141–G150. https://doi.org/10.1287/mksc.14.3.g141

Lin, J. (n.d.). Facebook行銷最關鍵的5件事，fb 行銷仍然是企業主力. Retrieved January5, 2020, from https://imjaylin.com/fb-trends/

LINE台灣月活躍用戶破2,100萬，特愛三大功能、使用率名列全球第一｜數位時代. (n.d.). Retrieved January5, 2020, from https://www.bnext.com.tw/article/51783/line-linetoday-linestore-sticker

Lovett, M. J., &Staelin, R. (2016). The role of paid, earned, and owned media in building entertainment brands: Reminding, informing, and enhancing enjoyment. *Marketing Science*, *35*(1), 142–157. https://doi.org/10.1287/mksc.2015.0961

Mahatanankoon, P., Wen, H. J., &Lim, B. (2005). Consumer-based m-commerce: Exploring consumer perception of mobile applications. *Computer Standards and Interfaces*, *27*(4), 347–357. https://doi.org/10.1016/j.csi.2004.10.003

Naik, P. A., &Peters, K. (2009). A Hierarchical Marketing Communications Model of Online and Offline Media Synergies. *Journal of Interactive Marketing*, *23*(4), 288–299. https://doi.org/10.1016/j.intmar.2009.07.005

Rossi, M., &Tuunainen, V. K. (2004). Mobile Banking Services ENACT-ERP development networks in action View project Electronic invoicing View project. *Article in Communications of the ACM*. https://doi.org/10.1145/986213.986236

Sajid SI. (2016). *Social Media and Its Role in Marketing*. https://doi.org/10.4172/2151-6219.1000203

Shankar, V., Smith, A. K., &Rangaswamy, A. (2003). Customer satisfaction and loyalty in online and offline environments. *International Journal of Research in Marketing*, *20*(2), 153–175. https://doi.org/10.1016/S0167-8116(03)00016-8

Stephen, A. T., &Galak, J. (2012). The effects of traditional and social earned media on sales: A study of a microlending marketplace. *Journal of Marketing Research*, *49*(5), 624–639. https://doi.org/10.1509/jmr.09.0401

Watson, C., Mccarthy, J., &Rowley, J. (n.d.). *Consumer attitudes towards mobile marketing in the smart phone era*.

Xie, K., &Lee, Y. J. (2015). Social Media and Brand Purchase: Quantifying the Effects of Exposures to Earned and Owned Social Media Activities in a Two-Stage Decision Making Model. *Journal of Management Information Systems*,

32(2), 204–238. https://doi.org/10.1080/07421222.2015.1063297

Yan, Z., Zhang, P., &Deng, R. H. (n.d.). *TruBeRepec: a trust-behavior-based reputation and recommender system for mobile applications*. https://doi.org/10.1007/s00779-011-0420-2

Yang, H. C. (2013). Bon appétit for apps: Young American consumers' acceptance of mobile applications. *Journal of Computer Information Systems*, *53*(3), 85–96. https://doi.org/10.1080/08874417.2013.11645635

解讀Ptt：台灣最有影響力的網路社群｜數位時代. (n.d.). Retrieved January5, 2020, from https://www.bnext.com.tw/article/38609/bn-2016-01-29-161210-178

電商如何用LINE@行銷？４個方法，有效串接O2O｜SmartM 新網路科技. (2017). Retrieved January5, 2020, from SmartM website: https://www.smartm.com.tw/article/34333637cea3