

Incentives on E-Commerce App Downloads in Medium Apps

A Case Study on the Effects of Coupons and Bonus Points

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Abstract—With the spread of mobile apps among consumers, they have also become increasingly important for e-commerce companies in recent years to attract customers. A central challenge in the use of mobile apps by companies is the acquisition and activation of new app users. This case study examines how incentives like coupons and bonus points to download an e-commerce app via other mobile apps, so-called "medium apps", have an effect. After a review of existing literature on similar topics, hypotheses regarding the probability of installation and actual app usage are developed and tested in an experiment. The hypotheses can be confirmed to a large extent, but especially coupons for the advertised online shop that publishes the e-commerce app do not show the expected effect. Further research questions are identified and practical recommendations for app marketing are derived.

Keywords—App Marketing, App Installation Ads, Smartphone Apps, Medium Apps

1 Introduction

1.1 Increasing relevance of mobile apps

With the spread of the smartphone worldwide, mobile internet use has also increased massively. According to a survey from Eurostat (2016), around 80 percent of EU citizens aged between 16 and 74 are connected to the Internet. The most important device for accessing the internet is the smartphone: 79 percent of respondents use the smartphone as their most important device for surfing the internet. In the age group between 16 and 24, the proportion is as high as 94 percent, and in the age group between 25 and 54 the proportion is particularly high at 83 percent [1]. These figures

are also reflected in other sources, according to which, for example, in education of children, younger parents are more open to mobile apps than older parents [2].

According to a survey of around 23,000 Germans surveyed, one of the most popular functions of smartphones, apart from the telephone function (around 87 percent) and surfing the mobile Internet (around 72 percent), is the use of apps, as 56.6 percent of those surveyed state [3].

These figures are also reflected in the forecasts for the development of sales generated via apps: According to a survey by the mobile marketing company App Annie, sales are expected to have doubled within five years from 61.9 billion US dollars to 129.1 billion US dollars by 2021 [4]. Similarly, others expect sales of mobile apps in Germany alone to reach around EUR 1.6 billion (around USD 1.75 billion) in 2019 [5].

As a result, companies are increasingly looking for ways to profit from these revenues and are launching their own apps. In the Google Play Store alone, the world's largest provider of mobile apps, around 2.46 million apps were available for download in the second quarter of 2019 [6]. In addition to expanding their product portfolio to open up new market segments, companies are also hoping above all to increase customer loyalty and improve customer service [7], using mobile apps and push notifications for targeted user communication [8].

Two points are central to the success of the effort to tap new revenue sources via mobile apps: on the one hand, the aim is to attract as many users as possible to the app (app downloads); on the other hand, users must actually use the app even after it has been installed. It is therefore highly critical for companies to understand what motivates users to download an app first and then also really to use it.

Regardless of the special case of the smartphone app, Internet users say they frequently rely on incentives such as coupons for discounts when shopping online [9]. The fact that the price of a product in location-based advertising can be identified as a decisive factor influencing the purchase decision also suggests the use of coupons or price reductions in online shopping [10].

1.2 Contribution to and limitations of existing research

Since the field of mobile apps is still relatively new, there are not many scientific papers on special issues such as the promotion of mobile apps with coupons in the sense of generating downloads after intensive literature research. In particular, a large part of the research carried out is dealing with related topics and so far is often based on surveys of potential users and thus refers to reported rather than actually observed behavior.

For example, Ref. [11] outlines that the relationships between users and a brand have a positive effect on the adoption of an app of the brand, but no statements are made about the actual download or the use of coupons. Ref. [12], on the other hand, shows that - in the case of paid apps - reductions in the price for downloading an app do have positive effects on installations, but in some cases also a negative effect on its ratings. Here, however, the aspect of the actual use of the app after installation is

missing as well. The results for a paid app are also difficult to transfer to apps that can be downloaded free of charge.

The authors of Ref. [13] state in their work that the use of coupons via portals such as Groupon must be critically questioned with regard to profitability. However, this paper does not refer to the use of coupons to generate app installations, but to the sale of products and services, so that no direct statements can be derived with regard to apps.

In contrast, an investigation on the effect of coupon sales promotion shows that the use of coupons by existing customers can have a positive effect on the repurchase of apps, whereby here too the special app installation context is missing and no statements can be made about the initial acquisition of customers through coupons [14]. Nor can the results of Ref. [15] be related to the acquisition of new customers: In contrast, their elaboration suggests that monetary incentives have no positive effect, at least when recommending apps to others.

Others provide an important hint about the promotion of mobile apps in other mobile apps: They show that users who use the medium app particularly intensively are less inclined to install the app advertised. In addition, their work draws attention to the importance of the proximity between the two apps in terms of content [16].

In this sense, this case study is intended to close the gaps and provide insights into how the use of incentives such as bonus points and coupons to incentivize app downloads affect download numbers on the one hand, but also the use of the app after installation on the other. The aim is to examine both coupons that discount the subsequent purchase in the advertised shopping app and incentives in terms of bonus points granted by the provider of a medium app.

1.3 Theoretical classification of the research question

This case study examines the impact of incentives in the advertising of mobile apps in medium apps and aims to provide a brief theoretical framework. To this end, the Theory of Reasoned Action is discussed first, followed by the Technology Acceptance Model.

The Theory of Reasoned Action is a framework that is intended to help to better understand human behavior and human decisions. Especially in marketing and research on the acceptance of technologies, the theory is applied [17]. The behavior of people is considered to be the result of the intention to behave. The behavioral intention in turn is composed of the subjective norms and the attitude toward a specific behavior. The attitude towards a specific behavior, in turn, is influenced by outcomes evaluation, among other things: Individuals thus make their behavior indirectly dependent on how they assess the results of their behavior in advance [18].

For the purpose of this study, the installation of a smartphone app can be considered as the actual behavior, whereby the incentives offered influence the attitude towards a specific behavior in the outcome evaluation. The intermediate stages of theory are not considered in this case study.

The Technology Acceptance Model (TAM for short) also provides a way of classifying the problem under investigation here theoretically: The TAM is a model for

stating why individuals use or do not use a particular technology and is based to some extent on the basic idea of the Theory of Reasoned Action. In TAM, actual system use is influenced by the behavioral intention to use, which results from the attitude towards using and perceived usefulness. Together with the perceived ease of use, which also influences perceived usefulness itself, the latter has a joint effect on the attitude towards using [19]. The TAM was extended and adapted several times, so that today a TAM2 [20], a TAM3 [21] and the Theory of Acceptance and Use of Technology (UTAUT) [22] exist.

The TAM is widely used in business informatics around questions of technology acceptance and has already been used in the past in the context of mobile apps, among others for user acceptance of mobile library applications, in the area of mobile banking, mobile gaming, mobile phone use while driving and e-commerce / mobile shopping apps [23]–[32].

The TAM plays a role in the question of the effects of incentives to install a smartphone app in so far as incentives for downloading and using an app may increase perceived usefulness.

1.4 Structure of this article

This case study is structured as follows: First of all, the literature search shows the findings of research on other related topics. The literature research is followed by hypotheses on the interplay of incentives and coupons for downloads and app usage. These hypotheses will then be tested in the subsequent empirical analyses. The discussion will summarize the results and discuss possible deviations of the actual observations from the hypotheses. The paper concludes with a summary including the identification of further research fields and the practical implications for app marketing managers.

2 Literature Review and Hypothesis

Both the use of mobile apps and the use of coupons by consumers, especially in retail, have been extensively researched: While the retail trade can look back on a certain history, the field of mobile apps has been mainly researched in recent years, primarily due to the rapid spread of smartphones.

Ref. [33] already filed a patent at the beginning of the 2010s and received a reward for downloading a (advertised) free app, whereby this reward consists in the (free) use of another app ("medium app"). Combined with the massively increased number of apps available in Apple's and Google's app stores, this demonstrates the importance of the challenge for companies to generate app downloads.

In the following, some selected research results are presented for downloading or using apps. Subsequently, the use of coupons at the end customer is presented.

2.1 Download and usage of mobile apps

For retailers, the use of mobile apps by end consumers represents a considerable added value: A survey based on 1,286 customers of a retailer shows that the use of mobile apps not only has a positive effect on online but also on offline shopping behavior. At the same time, according to the authors' survey, the use of the app by the retailer surveyed is driven by advertising spending and, among other things, also by the purchasing history of individual customers [34]. Others find a similar connection to app usage in a survey of 245 app users, in which the branded apps were examined by a total of three banks in Taiwan: The authors come to the conclusion that the adoption of an app and the assumed use are related to the brand attachment and brand identification of the users [11]. In both cases it can therefore be assumed that mobile apps are preferred by consumers if they already have a certain proximity to a company or product.

Another study deals with the determinants of the personal recommendation of mobile apps. It examines utilitarian, hedonic, monetary and non-monetary effects on referrals based on the analysis of data from 347 app users. Especially hedonistic benefits, but also non-monetary and utilitarian benefits like the quality of the app affect the likelihood of recommendation. On the other hand, monetary benefits that could incentivize the recommendation have no significant influence [15]. It remains to be seen to what extent the benefits investigated can be effective in attracting new users to a smartphone app.

A study on paid apps investigates the effects of monetary benefits on the download of mobile apps to gain new users: Online and offline promotions for completely free or partially price-reduced downloads are compared and the effect on download figures and ratings in the App Store is measured. The study comes to the conclusion that a digital, complete price reduction for the free app has the strongest influence on download numbers and also a positive effect on ratings. In the case of a partial price reduction, negative short-term effects on the ratings are observed [12]. In the case of paid apps, in addition to monetary promotions, the appearance in bestseller rankings also has an impact on the behavior of consumers when they consider downloading an app. Based on data from the Apple App Store, an app ranked as a bestseller leads consumers to spend USD 4.50 more for it than for an app that is not ranked [35].

This research is specifically dedicated to the question of how incentives by app publishers and by medium apps, which sell their reach for advertising, affect app installations and the subsequent use of apps. Ref. [16] comes particularly close to this research concern: they investigate what influences the success of app installation ads via medium apps. In their quantitative research, they conclude that users who already have many apps on their smartphones are less inclined to install new apps via app installation ads in medium apps. Intensive use of the medium app by the user also has a negative effect on the success of app installation ads. In contrast, a thematic proximity of advertising and advertised apps has a positive effect on the installations.

2.2 Coupons as incentives

Coupons are a widely used instrument of marketing and sales in the retail trade and - in particular - in e-commerce. The use of coupons to influence consumer behavior has already been investigated in many respects and from different perspectives.

In particular such coupons, which mean a price reduction when buying products, are important, since the price of a product is an important factor influencing the purchase decision [36].

Particularly those coupons that tend to come unexpectedly for the user, are particularly high and / or are specifically aimed at the respective user, show a particularly good performance in terms of redemption [37].

A time restriction due to the suggested urgency also has a positive effect on the probability that consumers actually redeem a coupon[38], whereby for example, in the case of coupons via coupon portals such as Groupon, companies that are less well known to the end customer benefit in particular. The long-term profitability of such coupons is more likely to be achieved if the coupons are primarily used to acquire new customers [13].

On the other hand coupons are likely to be redeemed especially if the consumer already has an existing relationship with the brand because he has already bought from the company in the past [39]. This research is, in a way, confirmed by Ref. [14]: They find that the use of coupons in e-commerce has a positive effect on the repurchase rate.

In the context of e-mail newsletters, it is often not sufficient for the channel to be free to attract new subscribers. In addition to usage dimensions such as entertainment, knowledge, time advantage, information or exclusive content, monetary benefits in particular are an important lever for attracting new users to subscribe for a newsletter. The advantage offered must also match the product offered, he states. In e-commerce, coupons or discounts are particularly suitable for first-time buyers [40].

2.3 Summary and hypothesis

Based on the results of previous research in the field of app installations and the use of incentives (and coupons in particular), the following things can be stated:

In the case of paid apps, promotions in which the download price is reduced have a positive effect on downloads [12]. Monetary benefits have at least no positive effect on the recommendation of apps [15], whereby partial price reductions can even have a negative effect on the user ratings of apps [12].

The use of coupons is also seen as an instrument in e-mail marketing, for example, to persuade people to subscribe to a newsletter [40]. Coupons can be an interesting instrument for companies to acquire new customers in the long term[13], [14]. Overall, with regard to coupons, it can be assumed that the amount and limited availability have a positive effect on the attractiveness of the coupon [38], [39].

In contrast, the case in which apps are advertised via other so-called medium apps has hardly been researched scientifically [16], so that hardly any relevant findings can be transferred to the research work carried out here.

The following hypotheses are therefore derived for the present question as to how incentives affect the success of app installation campaigns via medium apps:

First of all, we assume that the use of a coupon in app installation campaigns has a positive effect on the probability that an interested user will actually install the advertised app.

H1: The advertised app offering a coupon positively influences the likelihood of the app being installed.

Similarly, based on the work of Ref. [16], it is also assumed that an incentive through a medium app increases the probability that an app will actually be installed after a click on an ad.

H2: The medium app offering an incentive positively influences the likelihood of the advertised app being installed.

Additionally, based among other things on the work of Ref. [12], [36], the hypothesis is stated that a coupon that can be redeemed in the installed app has a positive effect on users to use the newly installed app.

H3: The advertised app offering a coupon positively influences the user engagement with the app after installation.

According to Ref. [39], the success of coupons is above all high when a customer has an existing relationship with a brand, whereby this finding was confirmed to some extent, for example, by the measurement of the repurchase rate by Ref. [14]. It is also already known that app installation ads via medium apps benefit from a thematic proximity between the two apps. In this respect, in the case of an incentive through the medium app, it is not assumed that this will have a positive influence on the engagement, but even a negative one, since the medium app users may only want to collect the bonus points and might not be really interested in the advertised app.

H4: The medium app offering an incentive negatively influences the user engagement with the app after installation.

3 Empirical Analysis

3.1 Experimental setup and data collection

An experiment in a real scenario will be used to test the four hypotheses formed above: An online shopping app of a German retailer is advertised via a medium app using app installation ads.

The medium app in turn rewards its users in part for the consumption of advertising, e.g. watching advertising videos, registering for e-mail newsletters, answering quiz questions or installing other apps. In this respect, this type of medium app is special because it was created to reward its users for consuming and interacting with advertising. The incentive offered by the medium app is granting bonus points in this case. Users collect these bonus points and can later exchange, for example, for shopping coupons or free trial subscriptions to print magazines.

Users of the medium app now receive advertisements that draw attention to the e-commerce app advertised. A random selection is made as to whether the user receives

an advertisement with or without the coupon of the advertised e-commerce app. The user is also randomly informed in the advertisement whether he or she receives a reward from the medium app in the form of bonus points. For a better comparability of the results, the advertisement is only shown to Android users, which can be regarded as the leading operating system for smartphones [41].

Figure 1 shows schematically how the user of the medium app receives the app installation ads, then arrives at Google's Play Store, installs the advertised app there and finally opens it.

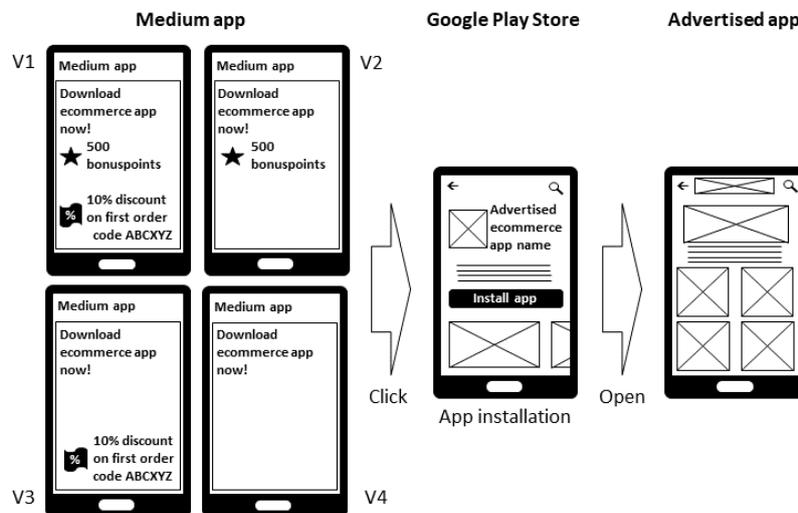


Fig. 1. User flow from medium app via Google Play Store to the advertised app

Altogether there are four possible constellations for the users of the medium app, how the app installation ads are controlled: In each case with and without bonus points offered by the medium app and in each case with and without a coupon for the first order in the advertised e-commerce app.

For each variant, the number of users in the Google Play Store directed to the entry in the advertised e-commerce app is measured, as are the number of users who install the advertised app and how often users open the app after the app has been installed. The app installation ads are measured over a period of two weeks (Sept. 17th 2019 till Oct. 1st 2019), the openings of the advertised app are measured up to one week after the end of the play-out of the advertisements (Sept. 17th 2019 till Oct. 7th 2019).

Both the number of calls to the Google Play Store entry, as well as the number of installations and the number of app openings after installation, are measured using software to evaluate app installation advertising, using a combination of server-side tracking and fingerprinting.

3.2 Statistical analysis and results

In total, around 444,000 clicks to the Google Play Store entry, around 2,750 installations and 5,830 app opens for users who have installed the app based on the app installation ads are measured.

The individual metrics are distributed as shown in table 1 for each variant of the advertising ads.

Table 1. Metrics measured per variant of app installation ad

Medium app	Advertised app	Play Store clicks	Installs	App opens
Bonus points	Coupon	1646	659	1084
Bonus points	No coupon	1200	697	1025
No bonus points	Coupon	80262	698	1898
No bonus points	No coupon	360947	692	1825

Note that a user may have clicked on the Play Store entry more than once and that the total number of app openings was measured, not just the number of users opening the app.

The measured metrics can now be compared with each other. Only those variants are compared that differ with regard to a single changed variable.

The partly massive differences in the absolute numbers in the Play Store clicks are due to a practical phenomenon: Since the company providing the data booked a certain number of installations with and without bonus point incentive through the medium app, but at the same time the traffic not incentivized by the medium app with bonus points generated massively worse installations, significantly more clicks into the Play Store were necessary. It is also conceivable that many of the Play Store clicks in this variant happened unintentionally, for example due to the fat finger phenomenon, users simply clicked on the ad by mistake [42].

The Chi² test and Cramer's V are methodically used in the following evaluation to statistically assess the relationships.

The Chi² test is used to test nominally scaled, categorical variables and checks whether observed frequencies differ statistically from each other, assuming as null hypothesis the statistical independence of the variables [43].

Since the Chi² test does not provide information about the strength of an association, Cramer's V is used to measure the strength of the association. The contingency coefficient is an association measure based on the Chi² value with values between 0 and 1, whereby no statement is made about the direction of the association. This results on the Chi² test [44]. With regard to strength, values in the range of 0.1 are considered weak, in the range of 0.3 medium and from 0.5 strong [45]–[47].

To test H1 (The advertised app offering a coupon positive influences the likelihood of the app being installed.), the variants with coupon and without coupon are compared. This comparison takes place twice, once without bonus points incentive of the medium app and once with bonus points incentive of the medium app. The values of the Chi² test are given (df=1, p=.05, Chi²crit=3.84) to test a significant difference

between the values and Cramer's V as a statement about the effect strength (see table 2).

Table 2. Influence of the effect of a coupon on the probability of an app installation

Medium app	Advertised app	Chi ²	Cramer's V
Bonus points	Coupon	31.641	0.0868
Bonus points	No coupon		
No bonus points	Coupon	950.7956	0.0463
No bonus points	No coupon		

In the case of bonus points offered through the medium app, H1 is rejected: Apparently there is an effect of the coupon, but it is even negative (see table 1). H1, on the other hand, can be accepted without bonus points from the medium app: The coupon offered by the advertised app has a significantly positive influence on the probability of installation, whereby the effect seems to be rather weak with a Cramer's V of 0.0463.

Table 3. Influence of the bonus points' effect from the medium app on the probability of an app installation

Medium app	Advertised app	Chi ²	Cramer's V
Bonus points	Coupon	10,748.9750	0.3593
No bonus points	Coupon		
Bonus points	No coupon	66,236.6559	0.4269
No bonus points	No coupon		

If an app installation ad is incentivized with bonus points by the medium app, this has - with and without coupon - a significant positive influence on the probability of an app installation (see table 3). In both cases the influence can be described as clear, but in the case of an advertisement without a coupon it is even stronger than with a coupon (Cramer's V: 0.4269 and 0.3593). H2 (The medium app offering an incentive positively influences the likelihood of the advertised app being installed.) is thus accepted for both cases.

Table 4. Influence of the effect of a coupon on the app openings after installation

Medium app	Advertised app	Chi ²	Cramer's V
Bonus points	Coupon	2.5883	0.0273
Bonus points	No coupon		
No bonus points	Coupon	0.2367	0.0068
No bonus points	No coupon		

Contrary to the expectations of H3 (The advertised app offering a coupon positively influences the user engagement with the app after installation.), the use of a coupon by the advertised app in the context of the app installation ads has no significant noticeable influence on the app openings in the measured period after installation. H3

can therefore be completely rejected on the basis of the data available here (cf. table 4).

Table 5. Influence of the bonus points' effect from the medium app on the app openings after installation

Medium app	Advertised app	Chi ²	Cramer's V
Bonus points	Coupon	57.8652	0.1155
No bonus points	Coupon		
Bonus points	No coupon	78.2334	0.1359
No bonus points	No coupon		

Looking at H4 (The medium app offering an incentive negatively influences the user engagement with the app after installation.), it can be seen that the negative effect of the bonus point incentive through the medium app is significantly noticeable, but the effect can be considered weak in both cases (Cramer's V: 0.1155 or 0.1359). This observation corresponds to expectations in both cases - with and without a coupon being offered by the advertised app (see table 5).

4 Discussion

4.1 Summary of results

The analysis of the research results so far has shown that both app installations in general and the field of app installation ads in particular have been little explored so far. At the same time, the topic enjoys a high practical relevance for companies [7], [34] due to the widespread use of smartphones [1] and the correspondingly high use of apps [3].

In line with this, there are already corresponding research results on the adoption of apps by smartphone users as well as numerous research studies on the use of coupons. With a few exceptions, the installation of (free) apps via app installation ads has hardly been researched to date [12], [35]. Especially the use of medium apps in combination with incentives and coupons has hardly been researched so far [16].

The findings presented here regarding the use of incentives by the medium apps or coupons through the advertised app show new findings about the effects in the case of app installation ads. The results of the study are summarized in Table 6.

Table 6. Overview of hypotheses

Hypothesis	Variant	Result	Interpretation
H1 (Coupon)	With bonus points	Rejected	No positive influence on installs
	Without bonus points	Confirmed	Positive influence on installs
H2 (Bonus points)	With coupon	Confirmed	Positive influence on installs
	Without coupon	Confirmed	Positive influence on installs
H3 (Coupon)	With bonus points	Rejected	No positive influence on opens
	Without bonus points	Rejected	No positive influence on opens
H4 (Bonus points)	With coupon	Confirmed	Negative influence on opens
	Without coupon	Confirmed	Negative influence on opens

Three things are particularly noteworthy:

Firstly, the coupon offered (here a 10% discount on the first order in an e-commerce app) only has a positive influence on the installation probability if no bonus points are offered by the medium app. This effect is positive, but very weak. If an incentive is made by bonus points, the coupon has no verifiable effect.

Secondly, the hypothesis that a coupon has a positive effect on the app openings of newly gained users cannot be confirmed - neither for a parallel incentive through the medium app, nor without one.

Thirdly, the hypothesis is confirmed that an incentive through the medium app actually has a negative effect on the subsequent app openings in both cases - with and without coupon through the advertised app. This effect is not particularly strong on the basis of Cramer's V, but it is still noticeable.

4.2 Critical review

All in all, the elaboration has shown that the entire subject area has so far been little researched. In this respect, the results represent an important contribution on the way to a better understanding of app installation ads. At the same time, however, it must also be noted that the findings generated here do not permit any generally valid statements about the effect of incentives and coupons on app installation ads: on the one hand, the findings must be limited to the special context of this certain medium app, here offering bonus points as an incentive to interact with advertisements. In addition, the characteristics of the users to whom the ads were directed are largely unknown, for example with regard to an existing relationship to the brand of the advertised app or price sensitivity. Nor can any statement be made, what influence the amount of the discount coupon or the type and amount of the bonus points in the medium app may have on the variables observed.

The hypothesis that a coupon has a positive effect on the app openings after an installation was rejected. In view of the findings of Ref. [37] this rejection is not surprising: the coupon used here for users of the medium app, which regularly places advertisements, was neither unexpected nor specially tailored for these users. Also, the coupon value cannot be shown as particularly high, especially since only one coupon value was tested. In this respect, there is another hypothesis for further

research work: With regard to app installations ads, the value of a coupon has a positive influence on the use of the app after installation.

It is also fitting that the coupon has been sent out to people who have not yet purchased the brand of the advertised app. According to previous research stating that an existing relationship between brand and customer has a positive effect on coupon redemption in the retail trade [39], this result is also only surprising to a limited extent. In a further elaboration, a suitable question here would be to what extent the relationship between customer and brand also has a positive effect on the subsequent use of apps with app installation ads.

5 Conclusion and Managerial Implications

Overall, the marketing of free mobile apps, especially via app installation ads in medium apps, has hardly been researched so far. In the context of mobile apps, research has focused mainly on the expectation and use [34] and recommendation [15], [35] of mobile apps with a few exceptions [12], [16], [35].

For app marketing managers in companies, this paper therefore provides some important findings on the use of incentives such as bonus points and coupons in app installation ads via medium apps. For installations, a coupon seems to be particularly relevant if no incentive is offered by the medium app at the same time. The use of bonus points in turn has a clearly positive influence on the probability of an installation, but at the same time has a slightly negative effect on the subsequent use of the app. The coupon with which users could save 10 percent on their first order after installing the e-commerce app, on the other hand, does not seem to play a role as a factor for the actual use of the app after installation.

As a consequence, the following points should be considered in the daily practice of app marketing:

- Firstly, incentives can be used to quickly generate app installations
- Secondly, it is important to encourage these app installations to actually use the app by means of a well-thought-out activation strategy
- Thirdly, a positive effect of a coupon on the probability of an app installation and subsequent use should not be assumed across the board

From a research perspective, the next steps should be to examine what role the types and heights of incentives play in the success of app installation ads. The question of the influence of an existing customer relationship on the brand should also be examined in this context.

Overall, this case study only shows a specific campaign that was targeted to a specific target group (people who are willing to install apps for bonus points) and may have received a shopping coupon for the installed app for a certain amount.

In this respect, this case study cannot claim to be of general validity, but can above all make a contribution to the assessment of such and similar questions.

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7 References

- [1] Eurostat, “Religious/spiritual commitments and psychiatric practice.” 2016, [Online]. Available: <https://ec.europa.eu/eurostat/documents/2995521/7771144/9-20122016-BP-DE.pdf/0aba7cec-63d5-411f-ad33-9dd91aa036e4>.
- [2] S. Papadakis, N. Zaranis, and M. Kalogiannakis, “Parental involvement and attitudes towards young Greek children’s mobile usage,” *International Journal of Child-Computer Interaction*, vol. 22, p. 100144, Dec. 2019, <https://doi.org/10.1016/j.ijcci.2019.100144>
- [3] VuMA, “Beliebteste Anwendungen und Funktionen auf den persönlichen Handys/Smartphones der Apple-Kunden in Deutschland im Vergleich mit der Bevölkerung im Jahr 2017,” Statista, 2017. <https://de.statista.com/statistik/daten/studie/856984/umfrage/umfrage-unter-apple-kunden-zu-den-beliebtesten-funktionen-auf-dem-smartphone>. https://doi.org/10.1007/978-3-322-85297-7_8
- [4] App Annie, “Umsatz mit mobile Apps weltweit in den Jahren 2015 und 2016 sowie eine Prognose für 2017 und 2021 (in Milliarden US-Dollar),” Statista, 2017. <https://de.statista.com/statistik/daten/studie/550222/umfrage/umsatz-mit-apps-weltweit/>.
- [5] BITKOM, “Umsatz mit mobilen Apps in Deutschland in den Jahren 2008 bis 2018 sowie eine Prognose für 2019 (in Millionen Euro),” Statista, 2019. <https://de.statista.com/statistik/daten/studie/173810/umfrage/umsatz-mit-mobilen-apps-in-deutschland-seit-2009> (accessed Oct. 19, 2019).
- [6] Appfigures, “Anzahl der verfügbaren Apps in den Top App-Stores im 2. Quartal 2019,” Statista, 2019. <https://de.statista.com/statistik/daten/studie/208599/umfrage/anzahl-der-apps-in-den-top-app-stores>.
- [7] BITKOM, “Aus Entwicklersicht: Was sind die vorrangigen Gründe für Ihr Unternehmen in die Entwicklung mobiler Anwendungen zu investieren?,” Statista, 2011. <https://de.statista.com/statistik/daten/studie/196892/umfrage/beweggruende-von-unternehmen-fuer-die-entwicklung-von-apps/> (accessed Oct. 19, 2019). https://doi.org/10.1007/978-3-663-07976-7_2
- [8] A. Wohllebe, “Consumer Acceptance of App Push Notifications: Systematic Review on the Influence of Frequency,” *International Journal of Interactive Mobile Technologies (iJIM)*, vol. 14, no. 13, 2020, <https://doi.org/10.3991/ijim.v14i13.14563>.
- [9] Statista, “Wie oft nutzen Sie Gutscheine (z.B. von Websites wie Groupon und MyDealz)?,” Statista, 2016. <https://de.statista.com/statistik/daten/studie/601748/umfrage/haeufigkeit-der-nutzung-von-gutscheinen-in-deutschland>.
- [10] 2HM, “Welche Faktoren sind bei standortbezogener Werbung für Sie kaufentscheidend?,” Statista, 2011. <https://de.statista.com/statistik/daten/studie/189717/umfrage/faktoren-fuer-eine-kaufentscheidung-bei-location-based-services/>.
- [11] K.-F. Peng, Y. Chen, and K.-W. Wen, “Brand relationship, consumption values and branded app adoption,” *Industrial Management & Data Systems*, vol. 114, no. 8, pp. 1131–1143, Jan. 2014, <https://doi.org/10.1108/imds-05-2014-0132>.
- [12] G. Askalidis, “The Impact of Large Scale Promotions on the Sales and Ratings of Mobile Apps: Evidence from Apple’s App Store,” *ArXiv*, vol. abs/1506.06857, 2015.
- [13] B. Edelman, S. Jaffe, and S. D. Kominers, “To Groupon or Not to Groupon: The Profitability of Deep Discounts,” p. 24. <https://doi.org/10.2139/ssrn.1727508>

- [14] Suryaningsih, I. B., Farida, L., Revanica, O., and Kusuma, A. A., "The Effect Of Coupon Sales Promotion, Online Customer Review And Perceived Enjoyment On Repurchase Intention In e-Commerce Shopee," *International Journal of Scientific & Technology Research*, vol. 8, no. 8, pp. 435–440, 2019.
- [15] C. Xu, D. Peak, and V. Prybutok, "A customer value, satisfaction, and loyalty perspective of mobile application recommendations," *Decision Support Systems*, vol. 79, pp. 171–183, Nov. 2015, <https://doi.org/10.1016/j.dss.2015.08.008>.
- [16] J. Lee and D.-H. Shin, "Targeting Potential Active Users for Mobile App Install Advertising: An Exploratory Study," *International Journal of Human-Computer Interaction*, vol. 32, no. 11, pp. 827–834, Nov. 2016, <https://doi.org/10.1080/10447318.2016.1198547>
- [17] M. D. Gellman and J. R. Turner, Eds., *Encyclopedia of behavioral medicine*. New York: Springer, 2013.
- [18] I. Ajzen and M. Fishbein, *Understanding attitudes and predicting social behavior*, Pbk. ed. Englewood Cliffs, N.J: Prentice-Hall, 1980.
- [19] F. D. Davis, "A technology acceptance model for empirically testing new end-user information systems : theory and results," Thesis, Massachusetts Institute of Technology, 1985.
- [20] V. Venkatesh and F. D. Davis, "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies," *Management Science*, vol. 46, no. 2, pp. 186–204, Feb. 2000, <https://doi.org/10.1287/mnsc.46.2.186.11926>.
- [21] V. Venkatesh and H. Bala, "Technology Acceptance Model 3 and a Research Agenda on Interventions," *Decision Sciences*, vol. 39, no. 2, pp. 273–315, May 2008, <https://doi.org/10.1111/j.1540-5915.2008.00192.x>.
- [22] Venkatesh, Morris, Davis, and Davis, "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly*, vol. 27, no. 3, p. 425, 2003, <https://doi.org/10.2307/30036540>
- [23] H.-Y. Yoon, "User Acceptance of Mobile Library Applications in Academic Libraries: An Application of the Technology Acceptance Model," *The Journal of Academic Librarianship*, vol. 42, no. 6, pp. 687–693, Nov. 2016, <https://doi.org/10.1016/j.acalib.2016.08.003>.
- [24] W. Boonsiritomachai and K. Pitchayadejanant, "Determinants affecting mobile banking adoption by generation Y based on the Unified Theory of Acceptance and Use of Technology Model modified by the Technology Acceptance Model concept," *Kasetsart Journal of Social Sciences*, Nov. 2017, <https://doi.org/10.1016/j.kjss.2017.10.005>.
- [25] E. Park, S. Baek, J. Ohm, and H. J. Chang, "Determinants of player acceptance of mobile social network games: An application of extended technology acceptance model," *Telematics and Informatics*, vol. 31, no. 1, pp. 3–15, Feb. 2014, <https://doi.org/10.1016/j.tele.2013.07.001>.
- [26] O. Oviedo-Trespalacios, O. Briant, S.-A. Kaye, and M. King, "Assessing driver acceptance of technology that reduces mobile phone use while driving: The case of mobile phone applications," *Accident Analysis & Prevention*, vol. 135, p. 105348, Feb. 2020, <https://doi.org/10.1016/j.aap.2019.105348>
- [27] A. Vahdat, A. Alizadeh, S. Quach, and N. Hamelin, "Would you like to shop via mobile app technology? The technology acceptance model, social factors and purchase intention," *Australasian Marketing Journal (AMJ)*, Jan. 2020, <https://doi.org/10.1016/j.ausmj.2020.01.002>.
- [28] P. Minnaar, L. Mototo, and T. Chuchu, "An Analysis of the Intention of Consumers to Adopt Branded Mobile Applications in South Africa," *International Journal of Interactive Mobile Technologies (iJIM)*, vol. 14, no. 04, Art. no. 04, Mar. 2020, Accessed: Jun. 18, 2020. [Online]. Available: <https://www.online-journals.org/index.php/i-jim/article/view/10602>. <https://doi.org/10.3991/ijim.v14i04.10602>

- [29] M. A. Saare, A. Hussain, and W. S. Yue, "Conceptualizing Mobile Health Application Use Intention and Adoption Among Iraqi Older Adults: From the Perspective of Expanded Technology Acceptance Model," *International Journal of Interactive Mobile Technologies (iJIM)*, vol. 13, no. 10, Art. no. 10, Sep. 2019, Accessed: Jun. 18, 2020. [Online]. Available: <https://www.online-journals.org/index.php/i-jim/article/view/11285>. <https://doi.org/10.3991/ijim.v13i10.11285>
- [30] M. R. Jaradat and N. M. Twaissi, "Assessing the Introduction of Mobile Banking in Jordan Using Technology Acceptance Model," *International Journal of Interactive Mobile Technologies (iJIM)*, vol. 4, no. 1, Art. no. 1, Dec. 2009, Accessed: Jun. 18, 2020. [Online]. Available: <https://www.online-journals.org/index.php/i-jim/article/view/1057>. <https://doi.org/10.3991/ijim.v4i1.1057>
- [31] R. S. Al-Marouf, S. A. Salloum, A. Q. AlHamadand, and K. Shaalan, "Understanding an Extension Technology Acceptance Model of Google Translation: A Multi-Cultural Study in United Arab Emirates," *International Journal of Interactive Mobile Technologies (iJIM)*, vol. 14, no. 03, Art. no. 03, Feb. 2020, Accessed: Jun. 18, 2020. [Online]. Available: <https://www.online-journals.org/index.php/i-jim/article/view/11110>. <https://doi.org/10.3991/ijim.v14i03.11110>
- [32] M. Rojas-Osorio and A. Alvarez-Risco, "Intention to Use Smartphones among Peruvian University Students," *International Journal of Interactive Mobile Technologies (iJIM)*, vol. 13, no. 03, Art. no. 03, Mar. 2019, Accessed: Jun. 18, 2020. [Online]. Available: <https://www.online-journals.org/index.php/i-jim/article/view/9356>. <https://doi.org/10.3991/ijim.v13i03.9356>
- [33] M. D. Corner, M. Adler, M. I. Ecemis, and K. Gabryelski, "Rewarding a user for downloading a free app with the right to use another free app," US20120265604A1, Oct. 18, 2012.
- [34] I. M. Dinner, H. J. van Heerde, and S. Neslin, "Creating Customer Engagement Via Mobile Apps: How App Usage Drives Purchase Behavior," *Social Science Research Network*, Rochester, NY, SSRN Scholarly Paper ID 2669817, Oct. 2015. Accessed: Nov. 26, 2019. [Online]. Available: <https://papers.ssrn.com/abstract=2669817>. <https://doi.org/10.2139/ssrn.2669817>
- [35] O. Carare, "THE IMPACT OF BESTSELLER RANK ON DEMAND: EVIDENCE FROM THE APP MARKET," *International Economic Review*, vol. 53, no. 3, pp. 717–742, 2012, Accessed: Nov. 26, 2019. [Online]. Available: www.jstor.org/stable/23251494. <https://doi.org/10.1111/j.1468-2354.2012.00698.x>
- [36] L. P. Yuniar, A. N. Hidayanto, Y. Ruldeviyani, and N. F. A. Budi, "The Determinants of Consumer Purchase Intention of Online Game Voucher: A Case Study of UPoint Online Store," in *Proceedings of the 2019 2Nd International Conference on Data Science and Information Technology*, New York, NY, USA, 2019, pp. 104–110, <https://doi.org/10.1145/3352411.3352428>
- [37] R. Venkatesan and P. W. Farris, "Measuring and Managing Returns from Retailer-Customized Coupon Campaigns," *Journal of Marketing*, vol. 76, no. 1, pp. 76–94, Jan. 2012, <https://doi.org/10.1509/jm.10.0162>.
- [38] J. J. Inman and L. McAlister, "Do Coupon Expiration Dates Affect Consumer Behavior?," *Journal of Marketing Research*, vol. 31, no. 3, pp. 423–428, 1994, <https://doi.org/10.2307/3152229>.
- [39] K. Bawa and R. W. Shoemaker, "The Effects of a Direct Mail Coupon on Brand Choice Behavior," *Journal of Marketing Research*, vol. 24, no. 4, pp. 370–376, Nov. 1987, <https://doi.org/10.1177/002224378702400404>
- [40] F. Strzyzewski, *Generierung von qualifizierten E-Mail-Adressen: 111 Taktiken für mehr Erfolg im E-Mail-Marketing*. Gabler Verlag, 2014. <https://doi.org/10.1007/978-3-658-26755-1>

- [41] Kantar, “Vergleich der Marktanteile von Android und iOS am Absatz von Smartphones in Deutschland von Januar 2012 bis September 2019,” Statista, 2019. <https://de.statista.com/statistik/daten/studie/256790/umfrage/marktanteile-von-android-und-ios-am-smartphone-absatz-in-deutschland>. https://doi.org/10.1007/978-3-322-84755-3_8
- [42] M. Jin, Y.-J. Liu, and J. Meng, “Fat-finger event and risk-taking behavior,” *Journal of Empirical Finance*, vol. 53, pp. 126–143, Sep. 2019, doi: 10.1016/j.jempfin.2019.06.004. <https://doi.org/10.1016/j.jempfin.2019.06.004>
- [43] U. Kuckartz, S. Rädiker, T. Ebert, and J. Schehl, “Kreuztabelle, Chi-Quadrat und Zusammenhangsmaße,” in *Statistik: Eine verständliche Einführung*, U. Kuckartz, S. Rädiker, T. Ebert, and J. Schehl, Eds. Wiesbaden: VS Verlag für Sozialwissenschaften, 2010, pp. 81–102. https://doi.org/10.1007/978-3-531-92033-7_4
- [44] A. C. Acock and G. R. Stavig, “A Measure of Association for Nonparametric Statistics,” *Social Forces*, vol. 57, no. 4, p. 1381, Jun. 1979, <https://doi.org/10.2307/2577276>.
- [45] J. Cohen, *Statistical Power Analysis for the Behavioral Sciences*. Elsevier, 1977.
- [46] P. D. Ellis, *The Essential Guide to Effect Sizes: Statistical Power, Meta-Analysis, and the Interpretation of Research Results*. Cambridge University Press, 2010. <https://doi.org/10.1017/cbo9780511761676.002>
- [47] D. Keller, “Effektstärke,” *Statistik und Beratung - Daniela Keller*, Jul. 28, 2015. <https://statistik-und-beratung.de/2015/07/effektstaerke/> (accessed Apr. 26, 2020).

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