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Jacek Kall

WSB University in Poznań
Faculty of Finance and Banking
e-mail: jacek.kall@wsb.poznan.pl
phone 61 655 33 74

Mobile Applications in Relations-Building by University

Abstract. *The high penetration of smartphones among higher education students begs the question of whether it would be possible to exploit mobile communication, and mobile applications in particular, in building relationships between students and their university. The paper describes the key differentiators of mobile communication, to subsequently examine the unique characteristics of mobile applications and thus provide a setting in which to discuss the findings of a representative survey involving the population of Poland's higher education students and aiming to find out about their awareness and usage of their university's mobile applications (vis-à-vis other popular categories of applications).*

Keywords: *mobile communication, mobile application, relationship, university*

Introduction

Persons born between 1980 and 1996 are referred to as Generation Y or Millennials. They represent almost a quarter of the total population of Poland[1] and make up a majority of the student community in higher education today. Generation Y is also often termed as "digital natives", even though it is just the youngest

[1] Author's own estimate based [GUS 2013: table 15].

cohort that has been growing up with electronic gadgets literally glued to their hands. While mobile devices and laptops have become what enables Generation Y to establish and maintain social relations, it is emblematic that for 92% of Polish Millennials friends and colleagues are the most important things in life, taking precedence over health, fame, and wealth [Odyseja 2014]. Does that imply, then, that mobile communication, and specifically mobile applications, offers potential that can be exploited by higher education institutions to build relationships with their students?

1. App generation students

Of all electronic gadgets that are around, it is chiefly the high penetration of smartphones that distinguishes Millennials from prior generations. At the end of 2014, nearly 4 out of 5 Polish Millennials surveyed by TNS owned a smartphone; for comparison's sake, at the same time smartphone owners constituted slightly more than 2/3 of those in the 30-42 age bracket, a half of the population aged between 43 and 54, and less than a quarter of people above 55 years of age [Olękiewicz 2014]. The outstanding role that smartphones have come to play for young people nowadays has been cogently commented by Tomasz Szlendak [2014]: "For 30-year-olds, walking out of home without their smartphone feels like leaving an arm behind. For 20-year-olds, it is like leaving their heads behind, and for secondary school students it is like leaving themselves behind". Howard Gardner, professor of cognition and education at Harvard Graduate School of Education [Gardner, Davis 2013], designates this demographic cohort as the app generation.[2] Mobile applications run smoothly on smartphones, processing user requests "on demand" and "just in time", hence ensuring that the required information is retrieved easily and instantly. What Millennials appreciate the most in mobile applications is that they allow them to accomplish an objective in an efficient and problem-free fashion. It could be said that, these days, young-aged smartphone owners perceive the world around them as nothing but a collection of applications, and believe that everything that is important in life should be operable through an app. Notably, in Poland there are 4 times as many app users in the youngest population group (aged 16-21) as among 40--year-olds, and 5 times as many as among people being in their 50s [Jestem.mobi 2014].

[2] App is a colloquial abbreviation for application.

2. What mobile communication is about

Mobile applications are – alongside text and multimedia messages, QR codes, mobile websites, mobile browser in-app advertising, mobile advertising, and GPS--based communication systems – a cornerstone of **mobile communication**, that is communication taking place via smartphones and tablets. Pricewaterhouse-Coopers consultants [PricewaterhouseCoopers 2014] try to capture its uniqueness through their EI2 formula: Engagement, Identity, Insight. Compared to earlier technologies, mobile communication affords unprecedented possibilities to **engage** consumers, allowing businesses to deliver them valuable, compelling offers (mobile coupons) and to support them in the purchasing process. At the same time, the offers can be customized to consumers' preferences and their situational context (e.g. visiting a shopping mall, checking in at a hotel or for a flight). Insights derived from the observation of other buyers' behaviors empower online sellers to recommend products and services that are popular with other smartphone users. If these **recommendations** are delivered at key stages of the decision process, they can translate into the choice of a specific brand, thus building up a buyer's relationship with it. If, on the other hand, smartphone users are to hand over their personal details, and hence their **identity**, to marketers, they must be assured that their privacy will not be breached, which implies control over what information is disclosed by a customer and where and how (what for) it is further circulated.

Mobile applications are typically supposed to perform one of the following three broadly defined functions [Nicol 2013]:

1. to differentiate a brand and improve its perception,
2. to enhance customer service as well as customer satisfaction, involvement, and loyalty,
3. to boost sales through:
   – personalized promotional incentives (e.g. mobile coupons),
   – targeting richer and more costly versions of a model or higher-end product lines owing to a better understanding of consumers and their needs.

3. Mobile applications – their unique characteristics and the problems that they pose

A mobile application is a special program running on a smartphone that occasionally requires direct Web access to be able to function (except certain applications, such as e.g. games). As a result, the smartphone can be used to do new things, and the customer experience is heightened [Klein 2013]. Drawing

a comparison between mobile apps and mobile ads, Sunil Gupta [Gupta 2013: 71-75] observes that the latter are usually characterized by not very intelligible graphical content and limited information capacity, never mind the fact that 4 in 5 users dislike them. In his view, what makes applications superior is that they are much less intrusive (this is why they are not perceived as adverts) and have a lot wider functionality. The potential inherent in mobile applications seems to be have been noticed by managers. A global research conducted in the spring of 2015 demonstrated that nearly a half of the businesses surveyed had a mobile application (14 percentage points up from the previous year) [Econsultancy 2015].

The reason why mobile applications are exceptionally important is that they account for 6/7[3] (there are also statistics showing that it is actually 8/9 [Nielsen 2014]) of smartphone usage (excluding phone calls and texting). These statistics are reflected in Spicy Mobile research performed using a dedicated piece of software called Mobience, installed on 1033 smartphones owned by Polish users to monitor their activity over a week in February 2015. The findings showed that mobile apps took up roughly **3/4 of the time that the smartphones were used**, while mobile Web browsers consumed around 1/10, and the remaining time was devoted to making phone calls and texting [Kłosowski 2015].

It is paradoxical that, while mobile applications are – from a user perspective – what smartphones are predominantly used for, there exists a barrier of indifference that effectively prevents apps from making their way to a smartphone screen (i.e. from being downloaded and installed). Although many adult users run, on average, 23-24 applications each month, the 5 top apps (in the USA, these are: Facebook, Gmail, Instagram, Weather, and YouTube; in the UK: Facebook, WhatsApp, Gmail, eBay, and Twitter) account for 5/6 of usage time [Husson, Ask 2014]. Polish smartphone users do not run so many apps – 2013 Google analytics [Google 2013a, Google 2013b, Google 2013c] show that, in the month preceding the survey, an average Pole would run 8 applications, a Czech – 10, and a German – 11. Millward Brown estimates [Millward Brown 2013] that 1 in 8 Polish smartphone owners never downloads any extra apps, using only those that are already pre-installed on their devices; in the US, the corresponding statistic is 7% [eMarketer 2015: 11]. As a result, download statistics for an average application are unimpressive. According to Deloitte, in 2011 4 out of 5 UK-branded mobile applications were downloaded no more than 1000 times [Deloitte 2013]. In Poland, there were only 6 applications that garnered more than a million downloads (Allegro, GG, TVN, Yanosik, Program telewizyjny WP, JakDojade); a typical app achieves above ten thousand downloads on average in the first two or three

[3] According to Flurry Analytics, cited from: IAB Polska 2015: 8.

months following its launch, with only few going beyond 20,000 – a ceiling considered a hallmark of success [Mikowska 2014].

It should be strongly emphasized that users' reluctance to download mobile applications **is not** attributable to a price barrier. A vast majority of applications (90%, allegedly) are available for free (payments are usually charged for full versions of games and utility apps solely). In the US, commercial apps are downloaded by slightly more than a third of smartphone users [eMarketer 2015: 11]; at the same time, in Poland there are 3 times as many users installing free applications only as those who run both free and paid apps [MEC Mobile Report 2014]. An IAB Polska research indicates that 71% of Polish smartphone owners download none but free applications [IAB Polska 2015: 21].

The reason why mobile applications fail to attract new users should rather be sought in their **inferior quality** and **unsatisfactory usefulness**, and in **poor brand visibility** with users. TechCrunch studies demonstrate that in 2013 the average star rating awarded to applications available from Apple and Google stores ranged between 2.2 and 2.9 stars in a 5-grade scale. Most negative comments relate to the lack of required functionalities (above a quarter of all comments), frequent lockups or malfunctions (more than a fifth), and poor design (every sixth comment) [Usablenet 2013]. Netbiscuits research conducted in 10 countries worldwide show that the primary reason for not downloading mobile applications is that users are unfamiliar with the brand and, consequently, disbelieve that the application could be useful [Netbiscuits 2013a].

Unfortunately, it is not all about overcoming the fear of downloading an application by an unknown brand. Localytics argues that every fourth application that has been downloaded never gets to be run [Netbiscuits 2013b]. This is consistent with the finding of Vibes studies indicating that only 4% of smartphone users, according to what they say themselves, actually uses all of the applications they have downloaded, and no more than one eighth of them utilizes most of the downloads [Vibes 2013]. Other sources claim that every fifth app is run only once, and 3 out of 5 apps get to be used no more than 10 times [Silverpop 2014]. This brings us to the question of what requirements must be met by a mobile application to make a success.

4. Mobile application functionalities

A mobile application should reward users in at least one of the following ways [Gupta 2013; Martin 2011]:

1) **by facilitating their life** – an app must be useful, it should come in handy in this or other domain by solving a user's (even if minor) problem. For

example, Clorox brand managers have observed that many consumers typing in their Web queries look for tips on how to remove persistent stains. This gave them the idea to develop (and implement for iPhones and, subsequently, for Android phones) an application called myStain and to advertise it through magazines and mobile ads. Besides suggestions on how to eliminate most typical stains, the app permits users to ask Dr. Laundry for more specific, personalized advice. The annual cost to maintain the application is estimated by the company at $50,000, while the cost to develop it was below the price of broadcasting a single commercial through a nationwide US television station. The app has so far been downloaded by more than 200,000 users, with much vehement in social media, as 1 in 2 users would share their experiences with their friends. Further, consumers' questions concerning atypical stains have inspired the company's R&D department to work on new stain remover formulas [Schadler, Bernoff, Ask 2014].

2) **by creating unique value** – apps should be able to provide users with something that they cannot get from traditional computers; at the same time, they must be an extension of the brand and its key promise. A New York Times mobile app adjusts its language and topicality to the time of the day: in the morning, it brings out the hottest news, such as morning news brief, weather forecast or (as long as the smartphone user is staying in New York City) notifications of subway delays. At lunchtime, news items become more analytical in character, and the bottom section of the website includes "lightweight" information of minor importance. Every day, smartphone owners are supplied with 50-80 selected articles from the print version of the newspaper, alongside tidbits and highlights from other press titles. In its first week in the market this paid app (a monthly subscription can be purchased at $7.99) took first place in a ranking of most downloaded news applications [Assir 2014].

3) **by providing entertainment opportunities** – one of the major reasons for using a smartphone is to kill the time – more than 50% of smartphone users (3 in 5 in the 18-30 age bracket) admit to playing on their smartphones at an idle time, when not performing any specific tasks, rather than merely sitting and thinking [*One in six smartphone owners*... 2013]. Alike, joint research carried out by Mobile Posse and Phoenix Marketing evidenced that smartphones are twice as often used to kill the time as to perform a specific task. This is particularly true of mobile applications – among users with at least 30 extra apps onboard such behaviors were observed twice more often than among smartphone users with no more than 5 extra apps [Mobile Posse i Phoenix Marketing 2013]. An explanation comes from the findings of a 2013 US research project: half of smartphone users play games to reduce stress, for 1 out of 3 playing is a favorite pastime when traveling, and 1 in 5 prefers playing to watching TV [*Smartphone Users*... 2014]. Accenture argues that entertainment apps (games) are run by

around 50% of Polish smartphone users [Accenture 2014]. This kind of application is perfectly exemplified by *Twist*, *Lick*, *Dunk*, launched in November 2012 by Mondelez, owner of the Oreo cookie brand, based on activities that were encouraged by a cookie commercial. The game climbed to no. 1 position in 15 countries around the world [Sacks 2014]. This clearly shows how apps allowing people to get away from their daily routines help build positive feelings about a brand.

4) **by offering bonuses** – applications should provide tangible benefits, such as mobile coupons or promotional offers (which e.g. the SuperPharm app does), or otherwise help consumers make savings. This is illustrated by a Starbucks app that currently has 10 million users, 3/4 of whom are based in the US. The app makes it possible to pay for treats purchased at the chain's coffee shops while at the same time serving as a loyalty card and enabling users to reload their gift cards. Nearly a half of app users have the gold status, which means that they have made at least 30 purchases at Starbucks shops, entitling them to a free drink or other menu item every twelfth buy and giving them access to special offers. There are estimates that the app generated 10% of Starbucks revenues in the US market in the spring of 2013, and 1/6 of total sales in the following year [Johnson 2014; Econsultancy 2015].

5) **by producing social benefits** – apps are supposed to enhance relationships between friends, which may involve broadcasting one's location in downtown areas (to facilitate making appointments, as is the case with e.g. Foursquare or Facebook) or supporting the process of social gifting.

A somewhat different view is held by Dirk Nicol [Nicol 2013], who recommends focusing mobile app design around three major factors, viz. context, content, and involvement. What he sees as critical is application usage **context**. This is because once it is established when and in what circumstances a specific app is to be used, its functionality can be tailored accordingly. An example of an app driven by usage context is the United Airlines app, whose design was informed by ethnographic research data. Namely, it was noticed that flight delays generate most stress for passengers who have a layover at a large airport and nervously struggle to find the nearest flight to their destination. It was therefore assumed that there was room for an app that could assist in rebooking tickets for the nearest connection. Consequently, and importantly, the app features a large touch button that can be operated with a thumb (as the other hand is usually needed to drag a heavy suitcase). In the first two years after its premiere, the application was downloaded by over 6 million people, and on domestic flights it is now used by every fifth passenger in lieu of boarding pass [Schadler, Bernoff, Ask 2014].

Content refers to what a mobile application specifically does and what other devices (car navigation systems, cameras, MP3 players, torches, TV re-

mote control units, musical instruments, etc.) it can substitute for. For example, mobile apps have become central elements of the 1 million dollar worth program MyMagic+ that is being introduced by Disneyland theme parks. The MyDisney Experience app allows users, for example, to book a table at a Disneyland Park restaurant of one's choice and order a meal while the other family members are still enjoying the Park's other attractions. What is more, as soon as the guests take their seats at the table (it is obviously smart, too), their presence is immediately made known to the kitchen area. Besides, the mobile app can help users find their favorite Disney characters across the Park [At Disney World 2014].

Involvement relates to the fact that the touch-screen interface, intuitive design, and ease of use, afford an opportunity to establish a profound, almost intimate relationships with consumers, going far beyond what is attainable for a personal computer. Such an app transcends the objective of facilitating the user's life, providing an insight into the smartphone user's likes and dislikes. Some mobile apps are purely relational by their very design, since they are geared to establishing and maintaining links with customers by e.g. inducing them to sign up for a loyalty program. A Maritz Loyalty study indicates that 10 out of 11 loyalty program participants are ready to download an associated mobile application [Patel, Schneider, Surana 2013]. A typical loyalty program app is Shell Motorist that enables a user to log on to a Shell ClubSmart account and check the number of points or view past transactions, as well as browse through obtainable rewards. Besides, a user can receive notifications of special offers and current promotions or learn more about any product available from Shell shops. Last but not least, the app helps you locate the nearest Shell station.

5. Higher education institutions and their mobile apps

Given the intrinsic characteristics of mobile applications and, even more so, the way that they are used by higher education institutions, the central question is whether one should build a universal app that tries to suit everyone or, rather, develop dedicated apps for applicants, students, alumni, etc. For one cannot be oblivious of the fact that each of these user groups will expect different functionalities from the app.

The first approach is exemplified by the iKozminski app catering to candidates as well as to students and alumni, authored by the Warsaw-based Kozminski University (Polish: Akademia Leona Koźmińskiego). It is demonstrably the most professionally designed of all mobile applications launched by Poland's institutions of higher learning. It has a very rich functionality (news, admissions, course descriptions, Virtual University, About the University, faculty,

contact, map, alumni, sports, Facebook, settings, e-mail, calendar, notifications, job openings, and a blog) and a very clear, graphically presentable interface. It has hitherto been downloaded by more than 5000 users and has earned an excellent rating of 4.4 in Google Play based on 111 user evaluations (as on August 5, 2015).

Another example is the myUE app developed by the Katowice University of Economics (Uniwersytet Ekonomiczny w Katowicach). Its designers themselves admit to having been "motivated in creating the app by the intention to help maintain lasting links between the University and its students, candidates, staff, and alumni."[4] Using the app, faculty as well as students or prospective applicants can keep track of everything that is going on at the University. The question remains, however, whether their smartphone screen is exactly where they want to look up this information. Prospective students will be disappointed finding no information about available majors and admission procedures or requirements; students would probably appreciate being able to access personalized class schedules or getting guidance in navigating around the campus, but there is no such thing. The number of downloads (between 1000 and 5000 from Google Play Store as on August 5, 2015) and its average rating (3.3 based on 29 user feedbacks) can tell us something about how difficult it is to make everyone happy with a single app.

A fairly universal app called UJK Mobile is also offered by the Jan Kochanowski University in Kielce (Uniwersytet Jana Kochanowskiego w Kielcach). It provides a lot of practical information on study in the town of Kielce, yet is not overall very useful for current students (never mind alumni). As on August 5, 2015 it has been downloaded by between 100 and 500 users.

An application suited to prospective students' needs – containing a set of tables compiled for those taking the maturity exam in the sciences – has been launched by the SGGW. Truly useful as the tables are, doubts could raised about what they have to do with that particular institution. A typical app designed with prospective students in mind is the one offered by Collegium da Vinci (formerly Wyższa Szkoła Nauk Humanistycznych i Dziennikarstwa): besides a complete course catalog and basic information about the institution, it includes a sort of game. With 100-500 downloads from Google Play Store (as on August 5, 2015), it cannot be seen as a major success. A much more popular app (5000-10000 downloads), designated as Your Development Path (Twój Kierunek Rozwoju) and allowing users to self-test their vocational aptitude, has been put out by the WSB Universities (Wyższe Szkoły Bankowe). Most criticism relates to the fact that the app cannot be run unless the prospective student signs in, and the process raises users' fears, involving disclosure of too much personal information

[4] http://www.ue.katowice.pl/uczelnia/aplikacja-mobilna-myue.html [accessed 5.08.2015].

(including residence address). Another typical app oriented on the prospective student is WZR UG offered by the Faculty of Management of the University of Gdansk (Wydział Zarządzania Uniwersytetu Gdańskiego). Users can select a study program, convert maturity scores, and look up the location of specific buildings around the campus, at the same time providing a lot of details about their surroundings. The application has been downloaded by 100-500 people (as on August 5, 2015). PWSZ Leszno (Państwowa Wyższa Szkoła Zawodowa w Lesznie), on the other hand, has published an application (100-500 downloads) that merely represents an extended, mobile version of the school's flyer.

Typical student-centered applications, providing such functionalities as class scheduler or grade viewer include: mUczelnia (by the University of Information Technology and Management in Rzeszow – Wyższa Szkoła Informatyki i Zarządzania w Rzeszowie) with above 500 downloads; MobilnaWSZiA (by the University of Management and Administration in Zamosc – Wyższa Szkoła Zarządzania i Administracji w Zamościu) with 10-50 downloads; Mobilna WSE (by the Tischner European University – Wyższa Szkoła Europejska im. ks. Józefa Tischnera w Krakowie) with 10-50 downloads; WSZiB Kraków (by the Kraków-based School of Banking and Management – Wyższa Szkoła Zarządzania i Bankowości w Krakowie) with 100-500 downloads; Górnośląska WSP (by the Cardinal August Hlond University of Education in Myslowice Górnośląska – Wyższa Szkoła Pedagogiczna im. Kardynała Augusta Hlonda w Mysłowicach, currently a division of the Jesuit University Ignatianum in Cracow – Akademia Ignatianum w Krakowie) with 100-500 downloads, combining the utility of a student-centered app with that of an applicant-centered one; iUKSW (by the Cardinal Stefan Wyszyński University in Warsaw – Uniwersytet Kardynała Stefana Wyszyńskiego w Warszawie) – 100-500 downloads. The University of Warsaw (Uniwersytet Warszawski) app is distinctive in that it has an important, albeit limited, functionality allowing users to find the university buildings scattered throughout the city. Its popularity with users is nevertheless negligible (10-50 downloads), even though the app has been available for several months already. The University of Lodz (Uniwersytet Łódzki) trod the same path in restricting the capabilities of its infoRektorat app to searching for university staff by the position held. Again, it has not attracted a lot of interest (100-500 downloads), although it has been around for more than three years now. On the other hand, the University's Faculty of Management has an app if its own (WZmobi) that enables the user to stay on top of current developments and upcoming events or find the contact information of academic as well administrative staff; notably, it also makes it possible to view class schedules by field of study and major (500-1000 downloads).

In a world where several dozen of mobile apps dedicated to university alumni and college graduates (e.g. MIT, University of Cincinnati, City University of Hong Kong, New York University Stern School of Business, Wesleyan Univer-

sity, Northeastern University, IESE Business School, Georgia State University or, last but not least, Yale) are available from Google Play Store, Polish higher education institutions offer literally none.

It is therefore clear that Polish institutions of higher education are still learning how to employ the new instrument – mobile apps. Some of them entrust their design and development to eager students, some completely forget to advertise the apps in their websites (for example, the Cracow University of Economics – Uniwersytet Ekonomiczny w Krakowie), many do not seem to reflect upon who and why would want to run an app on their smartphones (i.e. typically while on the move and for a short time). Whereas the key question that they should ask themselves is: what if their students are not at all interested in such applications?

6. Findings of research on mobile applications

The forgoing discussion implies the need to validate the following points: (1) whether students have an interest in mobile applications – as indicated by their reported usage of mobile apps; (2) to what extent students are aware of the availability of a mobile app from their higher education institution and what usage frequency they report (compared to their familiarity with, and usage of, their university website). Based on the statistics cited earlier in this paper, one could predict that a large majority of students will be enthusiastic users of mobile applications, particularly of social networking and entertainment apps. It could be also expected that, once they have downloaded and set up an app on their smartphone, they will make frequent use of it. It has already been pointed out that for the present generation, referred to as the "app generation", mobile applications are a natural choice when looking for fun, retrieving information, or building relationships with their peers.

Regarding the reported awareness and practical usage of mobile applications offered by institutions of higher learning, it could be hypothesized that a large faction of students will not even know that such apps exist, but that those who do know, will probably use them, albeit not very often. It could be also anticipated that university websites are more popular with students than mobile apps.

To validate the propositions put forth in this paper, a quantitative survey was performed among higher education students. The respondents were selected by non-probability sampling from amongst smartphone owners aged 18-34 and pursuing a higher education program at a Polish academic institution. The interviews were conducted via the Ariadna platform using the CAWI method between July 17 and July 22, 2015. The sample comprised 503 respondents.

Table 1. What applications have you ever run on your smartphone?

Mode of study	Social media						Maps & navigation		Transactional			News			Fun		Utility
	Facebook	Skype	Google+	Instagram	Snapchat	Hangout	Google Maps	Satnav	Allegro [online auction site]	Bank app	Comparison shopping	Weather	Onet	WP	YouTube	Games	"Cloud"
full-time	94.4	38.7	32.5	31.7	28.0	10,8	65.6	47.8	56.5	40.3	12.9	46.0	22.8	16.1	86.6	48.9	22.0
part-time	85.5	37.4	38.9	30.5	17.6	10,7	66.4	51.1	60.3	40.5	15.3	50.4	17.6	26.0	80.2	48.9	21.4

Source: own.

The research positively confirmed that mobile applications are massively used (cf. Table 1), with social media and fun apps in the lead. The most commonly used apps include Facebook and a variety of games, with 4 in 5 respondents admitting to running these regularly.

On a closer look at the statistics shown in Table 1, it seems that the following observations should be made:

– an enormous edge (twofold at the very least) that Facebook has over other social media applications; notably, the use of such apps as Snapchat or Instagram, whose penetration among American teenagers has been rising steadily over the last few years, are relatively rare among Polish students (run by 1 out of 3 respondents only);

– a high penetration by the YouTube app providing access to video content;

– penetration by games consistent with other research findings published in Poland;

– considerable interest in Google Maps and navigation apps[5] or in weather apps that forecast, or report on, weather conditions;[6]

[5] Among these apps, most users mentioned the free GoogleMaps app (2/5 of those using their smartphones for navigation). If the analysis is narrowed down to typical navigation apps, the champion is Here (free), used by nearly 1/6 of those running satnav apps on their smartphones, and AutoMapa (commercial), used by every eleventh smartphone owner using navigation apps.

[6] The most commonly used apps are accuweather (indicated by more than a quarter of those using weather apps) and Pogoda (nearly 1/6).

– a relatively low penetration by news apps (ranging between every sixth and every fourth student surveyed, depending on the application and the mode of study);

– a low penetration by apps giving access to files stored in a cloud.[7]

It comes as no surprise that young smartphone users aim, at least to a certain extent, to keep their phone screens tidy – they tend to remove apps that they have not used for a long time; and conversely, an app that is installed will be used rather often. Frequent usage is particularly true of social networking apps. Data compiled in Table 2 reveal that these apps, (Facebook alongside less popular apps such as Instagram or Snapchat) are run several times a day by 2 in 5 users (3 in 5 for Facebook)! Only 1 out of 4 respondents (every twelfth in the case of Facebook) using these applications runs them less often than once a week. Just for the sake of accuracy, it should be pointed out that the usage statistics for other social networking apps (outside the "big three") are slightly worse (this goes, above all, for the Skype mobile app).

Interestingly enough, the same pattern is visible in the case of news applications (WP, Onet or weather apps) – many more users run them at least once a day, while a much smaller percentage do so less often than once a week.

This is even truer of mobile games – every fifth smartphone gamer runs a game less often than once a week, yet 2 out of 5 play them once a day at a minimum.

For obvious reasons, Google Maps or navigation apps are much less frequently run on smartphones.

It was highly predictable that higher education students, alike other representatives of the "app generation", are aware of mobile applications and use them very often, with social networking apps, mobile games, and (less often) news apps topping the list. They will also download apps that support online shopping or bank transactions,[8] as well as maps and navigation apps facilitating travel – yet these are (understandably) used relatively less often.

As anticipated, many of the students surveyed (every third) have no idea whether their university has a mobile application (cf. Table 3). This ignorance is more common – by 1/3 – among female than among male students (perhaps young males found it more difficult to admit this), and slightly more common among younger students than among older-aged students. The high percentage of students who are ignorant of the availability of a mobile app from their institution may be attributable to:

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[7] Those few who did make use of cloud storage named the following: Dropbox (2/5 of those uploading files to clouds), Google Disk (above 1/3), and OneDrive (more than a quarter of all cloud users).

[8] The most popular bank app was the one provided by mBank (above a quarter of responses). Other common apps include those by ING, PKO BP, and BZ WBK (11-13% each).

Table 2. Usage frequency of selected mobile applications by higher education students (ranked by how often used)

Mobile applications	Several times a day	Once a day	2-3 times a week	Once a week	2-3 times a month	Once a month	Less often than once a month
Facebook	62.6	12.7	11.0	5.4	2.4	1.9	3.9
Instagram	44.9	15.8	13.9	7.0	5.1	2.5	10.8
Snapchat	40.9	17.3	11.0	7.9	4.7	2.4	15.7
Games	29.3	14.6	24.8	9.8	11.0	2.4	8.1
Weather apps	28.3	34.6	20.7	5.5	5.9	1.3	3.8
Hangout	25.9	3.7	9.3	7.4	9.3	5.6	38.9
WP	24.5	22.3	24.5	12.8	4.3	5.3	6.4
YouTube	18.5	16.2	25.3	16.4	11.9	4.9	6.8
Onet	15.7	28.7	19.4	12.0	8.3	4.6	11.1
Cloud storage	10.9	13.6	28.2	13.6	13.6	8.2	11.8
Google+	9.9	16.3	17.4	20.9	9.3	8.7	17.4
Ceneo	7.4	1.5	13.2	26.5	26.5	11.8	13.2
Allegro	6.6	6.9	21.5	15.2	27.0	10.0	12.8
Skype	5.7	5.7	17.1	13.0	22.3	14.5	21.8
Bank apps	4.9	15.3	33.0	21.2	15.8	3.9	5.9
Google Maps	3.0	2.7	26.9	23.9	21.5	6.6	15.4
Navigation apps	2.4	2.4	14.3	18.8	27.3	11.0	23.7

Respondents: higher education students owning a smartphone and reporting at least a one-time use of an app belonging in a given category.

Source: own.

1. overall little interest in mobile applications among students – however, the statistics presented above prove that this is not the case;
2. poor support rendered by higher education institutions to their apps (no publicity, no incentives to download them). It turns out, for example, that few universities publicize information on their mobile apps in their websites' main pages. Worse than that, there are institutions (e.g. the Cracow University of Economics) whose websites will not return any information on the availability of a mobile app even through the search page;

3. a literal interpretation of the question's wording ("[…] have its own mobile app") – where the app was developed and launched by a third party (a student, a scientific society/science club, etc.), the respondents might have been misled to answer "no" or "don't know". Most likely, however, this was not the main factor behind the large percentage of "don't know" responses;

4. a lack of interest in the academic aspect of university study, which could bring about indifference toward an app providing relevant tips and information. While this might certainly be true about some, it seems that it should not be assumed that so many university students (every third) would be completely unconcerned with activities that, after all, take up a significant amount of their time.

Table 3. Does your institution have its own mobile app (e.g. for smartphones)?

		Yes	No	Don't know
Total		12.9	51.3	35.8
Sex	female	11.6	47.1	41.3
	male	14.5	56.4	29.1
Age	18-24 years	12.2	51.1	36.7
	25-34 years	18.9	52.8	28.3
Mode of study	full-time	13.4	51.1	35.5
	part-time	11.5	51.9	36.6

Source: own.

More than a half of the respondents stated that their university did not have its own mobile app. Obviously, some of them might be simply mistaken about it (thinking that there is no such app – for reasons 2, 3 and 4 indicated above – although it actually exists), yet this clearly demonstrates **that mobile applications are rare among Polish higher education institutions and that most students may have never heard of them**. Barely 1 out of 8 respondents in the survey – slightly more among men, particularly older-aged and studying full--time – reports being in the know about the existence of their university's mobile application.

It was easy to predict that many more students will be aware of their institution's dedicated mobile website than of mobile apps. Every third respondent – again, more among those older-aged and studying full-time – knows about the university's mobile website (cf. Table 4). This means that the awareness of mobile websites is two and a half times more common than the awareness of mobile apps!

Table 4. Does your institution have a website dedicated to mobile devices, e.g. smartphones?

		Yes	No	Don't know
Total		33.4	27.8	38.8
Sex	female	33.7	26.8	39.5
	male	33.0	29.1	37.9
Age	18-24 years	33.1	27.6	39.3
	25-34 years	35.8	30.2	34.0
Mode of study	full-time	34.1	27.2	38.7
	part-time	31.3	29.8	38.9

Source: own.

Interestingly enough, a similar (or even slightly higher) percentage of the respondents admit to being ignorant of whether their university has a mobile-optimized website or not. What makes it so surprising is that fact that, while a mobile app needs to be actively searched for (one has to look it up at the Google Play Store, the Apple Store, or check the university's website), finding out whether a website can be viewed on a smartphone is extremely easy – all you need to do is type in the familiar address in the browser window. The nearly 40% of students who cannot tell whether their university has a mobile website either did not understand the question (what is a "a website dedicated to mobile devices"?), or are entrenched in the conviction that websites are most comfortably accessed from laptops and PCs rather than from smartphones, or are not very interested in what their university might want to communicate to them through its website. Intuitively, the second option (computers are best for exploring websites) appears to be the most likely explanation.

Students are much more familiar with their universities' mobile websites than with their mobile apps. It makes sense therefore to look at how often mobile apps are used by those who are aware of them. It turns out that (cf. Table 5) almost 3 out of 4 "aware" respondents use their university's mobile app, and 1 in 5 does it really often – at least once a day. This stands for a significantly higher usage frequency than the average for such applications as Ceneo, Allegro, Skype, Google Maps or navigation apps! It should also be noted that, overall, nearly 2 out of 3 students stating an awareness of their university's mobile application use it at least once a month. Apparently, universities' mobile apps have fewer occasional (i.e. running them less often than once a month) users than such applications as Hangout, Skype, Google+, or satnav apps! This seems more than enough to substantiate the belief in the (potentially) high relevance of mobile apps.

Table 5. How often do you personally use your university's mobile app?

		Several times a day	Once a day	2-3 times a week	Once a week	2-3 times a month	Once a month	Less often than once a month	Not at all
Total		4.6	15.4	10.8	4.6	21.5	6.2	10.8	26.2
Sex	female	6.3	18.8	9.4	6.3	25.0	9.4	12.5	12.5
	male	3.0	12.1	12.1	3.0	18.2	3.0	9.1	39.4
Age	18-24 years	3.6	16.4	10.9	3.6	18.2	7.3	12.7	27.3
	25-34 years	10.0	10.0	10.0	10.0	40.0	0.0	0.0	20.0
Mode of study	full--time	4.0	18.0	12.0	4.0	22.0	4.0	12.0	24.0
	part--time	6.7	6.7	6.7	6.7	20.0	13.3	6.7	33.3

Respondents: higher education students owning a smartphone and stating an awareness of their university's mobile app.

Source: own.

It should be observed that frequent usage (at least once a day) of a university app is much more common – by 2/3 – among women than among men. Understandably, a similar pattern is found between full-time and part-time students (classes held daily stimulate e.g. frequent use of the app to check class schedules). On the other hand, there are three times as many male as female non-users (among those who are aware of the app); over 1/3 more non-users in the lower than in the upper age bracket; and above 1/3 more non-users, too, among part-time than among full-time students.

Vis-à-vis the corresponding statistics for mobile apps, the percentage of respondents who are aware of mobile websites and actually use them is **a little lower** (cf. Table 6). Interestingly, there are more frequent users (those reporting usage at least once a day) among women than among men, unlike for mobile apps; there are 2/3 fewer frequent users among younger-aged than among older-aged students, and two and a half times fewer among part-time students than among full-time students. On the other hand, there is just a negligible percentage (1 out of 14) amongst those being aware of a mobile website who do not visit it at all – more than three a half times fewer than for mobile apps. This may result from some students' reluctance to "overload" their smartphone screen (some regarding

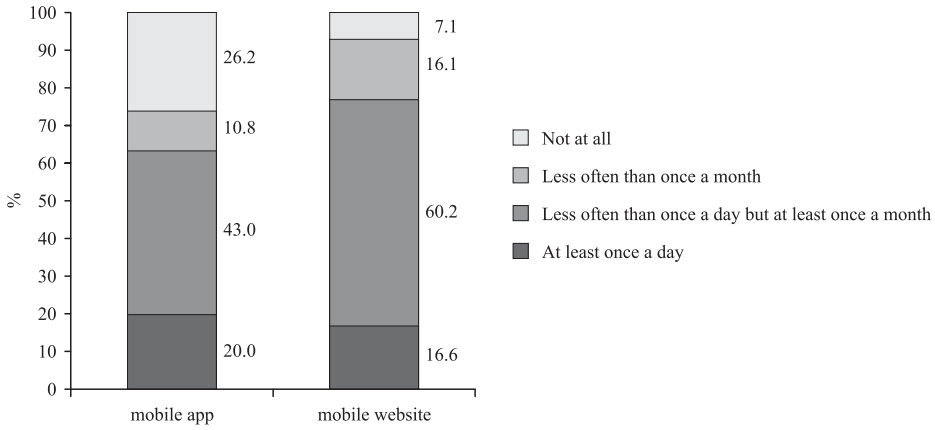
Table 6. How often do you personally use your smartphone to visit your university's website?

		Several times a day	Once a day	2-3 times a week	Once a week	2-3 times a month	Once a month	Less often than once a month	Not at all
Total		10.1	6.5	19.0	11.9	17.9	11.3	16.1	7.1
Sex	female	9.7	5.4	18.3	11.8	17.2	11.8	19.4	6.5
	male	10.7	8.0	20.0	12.0	18.7	10.7	12.0	8.0
Age	18-24 years	9.4	6.0	19.5	11.4	17.4	12.1	16.1	8.1
	25-34 years	15.8	10.5	15.8	15.8	21.1	5.3	15.8	0.0
Mode of study	full--time	11.8	7.9	18.1	11.8	16.5	10.2	18.1	5.5
	part--time	4.9	2.4	22.0	12.2	22.0	14.6	9.8	12.2

Respondents: higher education students owning a smartphone and stating an awareness of their university's mobile-optimized website.

Source: own.

Chart 1. Mobile app vs. mobile website usage (among those who are aware of each)



Source: based on Table 5 and Table 6.

it as little short of a body part) with unwanted applications – once an app gets to the screen, however, it is used heavily; if it is unlikely to be used, it simply never gets installed.

A comparison between usage frequency for university apps and for websites (cf. Chart 1) indicates that, while it is more difficult to induce a student to download an application than to type a familiar URL in the mobile browser window, users are more likely to frequently run apps that they have already downloaded than to pay repeated visits to a known website. Frequent usage (at least once a day) is reported 50% more often for mobile apps than for mobile websites; sporadic usage (less often than once a month) is reported for mobile apps by 1/6 fewer students than for websites.

Conclusion

Both the publicly available statistics and the research specifically performed to validate the propositions set forth in this paper clearly indicate that mobile applications afford real opportunities to strengthen a student's relationships with the university. First of all, smartphones are held in almost every student's hand. Secondly, most students see mobile apps as a natural ingredient of what their smartphone can do for them. Research findings provide evidence that 3 in 4 among those who are aware of the availability of their university's mobile app will install it on their smartphones and, consequently, run it often enough. As along, of course, as the app actually offers any of the functionalities that students or prospective students expect (this implies, for example, that it is not merely a mobile version of a brochure addressed to prospective students). Importantly, higher education institutions should make efforts to actively promote their mobile apps (which is what, for example, the Kozminski University does), and then consistently track download and usage statistics.

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Aplikacje mobilne w budowaniu relacji ze szkołą wyższą

Streszczenie. *Wysoka penetracja smartfonów wśród osób aktualnie studiujących każe zadać sobie pytanie o możliwość wykorzystania komunikacji mobilnej, a w szczególności aplikacji mobilnych w budowaniu relacji studentów z ich uczelnią. W artykule opisano kluczowe wyróżniki komunikacji mobilnej, by następnie na tym tle dokonać analizy specyfiki aplikacji mobilnych. Następnie przeanalizowano wyniki badań populacji osób studiujących w Polsce, poświęconych znajomości i korzystaniu przez nich z aplikacji mobilnej ich uczelni (na tle innych, popularnych kategorii aplikacji).*

Słowa kluczowe: *komunikacja mobilna, aplikacje mobilne, relacje, szkoła wyższa*