THE USE OF MOBILE APPLICATIONS IN THE GROUP OF GENERATION Y

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Abstract:
P. F. Drucker said that the key to economic success in the 21st century would be technology and demographics (Kantrow, 2009). According to this principle, any growth-oriented enterprise should monitor the behaviour of the younger generation closely, because that's the Internet will become the main news and purchasing channel. There are already signs that global trade cannot keep up with the increasing demand of consumers who use the Web and devices connected to it (Global Powers of Retailing 2016: Navigating the New Digital Divide). Mobile applications are one of the areas which are not fully penetrated and utilized nowadays. This paper therefore concerns the area of mobile applications. It is divided into the following sections: Introduction; M-commerce; Mobile applications; Application definition and characteristics; Application divided into groups; Application purposes; Generations; The concept of Generation; Differences between Generations; Characteristics of Generation Y; The use of mobile applications among Generation Y; Questionnaire composition and test group; Results and Conclusions.

Keywords: Mobile applications, Generation Y, preferences, use of mobile applications

1. INTRODUCTION

P. F. Drucker said that the key to economic success in the 21st century would be technology and demographics (Kantrow, 2009). According to this principle, any growth-oriented enterprise should monitor the behaviour of the younger generation closely, because that's the Internet will become the main news and purchasing channel.

There are already signs that global trade cannot keep up with the increasing demand of consumers who use the Web and devices connected to it (Global Powers of Retailing 2016: Navigating the New Digital Divide). Mobile applications are one of the areas which are not fully penetrated and utilized nowadays.

This paper therefore concerns the area of mobile applications. It is divided into the following sections: Introduction; M-commerce; Mobile applications; Application definition and characteristics; Application divided into groups; Application purposes; Generations; The concept of Generation; Differences between Generations; Characteristics of Generation Y; The use of mobile applications among Generation Y; Questionnaire composition and test group; Results and Conclusions.

2. M-COMMERCE

In the world is already 1.75 billion mobile devices, which include for example: smartphones and tablets, whose number is constantly increasing. The number of users hooked up to the World Wide Web has been increasing in tandem with the number of devices. A historical turning point was reached in 2014, when the number of mobile devices connected to the Web exceeded the number of stationary devices (Nieradka. P. Niedźwiecka. K. 2015). It should be noted a strong trend of the overall global e-commerce market and its development towards m-commerce market.

About 22,7% of all global site traffic on ecommerce website come from smartphones (Craig, 2016). European mobile shoppers spent approximately 20 billion GBP in 2014 (European shoppers to double mobile spend this year). This sector has also recorded huge growth in Poland, which is at the forefront of European countries. Looking at the growth trend in the number of mobile devices, it can be assumed that the m-commerce market still has a lot of potential for growth. It may even reach half the e-commerce market in terms of value (Siwicki, 2014). In order to avoid squandering this potential growth, companies should be focus on the market for applications and other implementations for mobile devices.

3. MOBILE APPLICATIONS

3.1. Application definition and characteristics

Mobile application – is the general term for computer software run on the various mobile devices, including ("App" voted 2010 word of the year by the American Dialect Society (UPDATED)) palmtops and mobile phones, as well as tablets and smartphones, which are being used more and more frequently. All these devices come with an operating system and several basic preinstalled applications.

Currently, mobile applications are developed directly for a wide variety of platforms and by best programming languages. The "best" programming language does not exist, because each of language has its: application, advantages, disadvantages and vulnerabilities. Each program is within a certain range served, while in other less accessible. But depending on the application operating environment in which it will operate, there are several preferred programming languages (Raento, 2005). Summary are presented in Table 1.

Table 1: Specification of platforms and preferred programming languages

Application environment	Preferred programming languages	
Android	➢ Java	➢ C++
iOS	➢ Objective-C	➢ Swift

Windows Mobile:	➤ C / C++	➤ C# / Visual Basic
Windows Phone 7	➤ C# (dla Silverlight)	

Source: Own study

One of the application categorizations is a breakdown by application version. There are three types: Web, Native and Hybrid. Each type has its own strengths and weaknesses. The graphic representation in Table 2 was therefore created to provide a better specification of the individual application types.

Table 2: Description and specification of advantages and disadvantages of: Web, Native and Hybrid applications.

Name	Characteristics:	Advantages	Disadvantages
Web	Solution in which the website is opened by the Web browser of the device (using HTML5). This type of application is characterized by minimizing labour intensity in the case of updates. This solution has a graphical user interface (GUI) that is adapted to the device rather than to a specific platform (iOS, etc.)	• Can be used with conventional Web browsers. Compatible with the operating systems of mobile devices. There is ease in subsequent servicing.	• A permanent Web connection is required. • Applications require an optimized User Interface to adequately reflect their appearance and operation.
Native	This type of application is developed using a specific programming language (e.g. Objective-C) for a specific platform (e.g. iOS). Consequently, the programmer has access to the functionalities of the devices for which the application is dedicated. It is distributed via application stores.	• Application is user friendly on dedicated devices. • It responds very fast to human movement. • Straightforward offline data processing. • Direct access to device components (camera, GPS, etc.)	• An issue with data protection, owing to the access of the applications to the device components, i.e. user data that which may be transmitted to unauthorized persons.
Hybrid	Hybrid solution is a combination of the two above mentioned types.. Hybrid applications are developed by Web technology, although they resemble to native applications. This type of application is also distributed via the platform stores of which application operates.	• Functionalities come from the Web application server. • There are websites that support integration with hybrid applications.	• Application operates less smoothly. • There is a risk of malware (viruses, Trojans, etc.) due to possible breaches.

Source: Own study

There are also other classifications of mobile applications. Applications can be divided into several basic groups, depending on their purpose and the way(s) in which potential users will make use of them:

- Stand-alone – the software runs independently with no need for Internet access;
- Client – the software is tailored to meet the needs of the customers. Most frequently, an application will be connected to an appropriate server via the Internet, so that the user can have direct contact with the system operated by the organisation;
- Web-based – various mobile websites used by a wide array of Web users;
- Games – software, in the broad sense of the term, used for entertainment purposes.

It should be noted that the number of available mobile applications has been constantly increasing in tandem with the number of mobile device users, i.e. service providers are constantly striving to tailor their applications to the lifestyles of potential customers.

3.2. Application divided into groups

The number of applications available globally has been increasing rapidly. This implies that there is a strong demand on applications and that applications create various kinds of added value for the users. The applications can be divided into many thematic categories, e.g. Books, Business, Catalogues, Education, Entertainment, Finances, Food & Beverages, Games, Health & Fitness, For Children, Lifestyle, Magazines & Newspapers, Medicine, Music, Navigation, News, Photos and Video, Productivity, References, Shopping, Social Networks, Sports, Travel, Tools, and Weather.

All the above-mentioned categories of mobile applications can be assigned to more general groups such as (Mobile Commerce In 2015, 2015): Mobile Payments, Retail Enablement, Mobile Retail, Marketplacent, On-Demand Service, App-Based Services and Publishing.

3.3. Application Purposes

Mobile applications are frequently used for a specific purpose, e.g. to enable the customer to become better acquainted with the product, or to become familiar with it in a new or unconventional way, to facilitate shopping by using a mobile device, or to offer some other form of added value to the customer. The applications make these helpful facilities available by using such things as: Wi-Fi, LTE, geolocation, and push notifications.

Despite the global proliferation of applications, those developed to handle social media have taken the lead. The most popular application is Facebook (Craig, 2016). The users of mobile implementations are counted in the millions. (Craig, 2016): Facebook – over 1,442 billion, Instagram – 400 million, Tumblr – 420 million (78% mobile penetration), Snapchat – more than 100 million, and Twitter – 307 million (number of monthly active Twitter users worldwide from Q1/ 2010 to Q3/ 2015 [in millions]). The rate of growth of social media users has been impressive. This is also true for Poland, where Generations Y and Z penetrate the social media market intensively using mobile devices.

Briefly speaking, these applications are becoming increasingly interwoven with our day-to-day activities and are recording our days.

4. GENERATIONS

4.1. The concept of Generation

There was a time when a period lasted hundreds of years, and a new one would only arrive after several generations, as a result of major changes in the environment or country in which a given generation functioned. Social changes are now much faster, so much so that the older generation cannot keep up with the revolutionary changes.

In the past, the letters X, Y and Z were mainly associated with math classes and unknown quantities that had to be calculated. Today, the letters X, Y and Z stand for consecutive social generations entering the global labour market.

The term Generation X term was used by British sociologist Jane Deverson as early as 1964. Deverson published the results of her research on the youth of the day in a book titled "Generation X". Generation X was later described by Douglas Coupland in a novel titled "*Generation X: Tales for an Accelerated Culture*". A great deal of sociological, demographic and economic research has been carried out since then. This research has contributed to a better understanding of the nature of each generation.

However, it is not easy to pinpoint the birth dates or years of individual social groups. The age boundaries for a given generation cannot be explicitly determined. P. Kotler, for example, defines Generation X as people born in 1965–1977. They were raised during a time of crises, and political and income changes. Generation Y, by contrast, was born in 1978–1994 (Kotler, 2005). Other authors, including J. M. Lawrence, broaden this definition by including Americans born between 1977 and 1999 (Lawrence, 1999).

The age boundaries for the various generations differ slightly in different parts of the world. This is due to, *inter alia*, the development level of civilization globally and the political systems prevailing in various parts of the world.

Generation X comprises people aged 37-51. This generation remembers the first technological tools, e.g. mobile phones and the first stationary devices. They appreciate stability and having a permanent job.

Generation Y includes people who have only just entered the workforce, and others who have several years of work experience. They are aged 17-36. Generation Y grew up when the new technologies, now starting to be used on an everyday basis, were only just starting to take off.

Generation Z is the youngest social group, and comprises people born around the turn of the millennium (2000). They are no more than 16 years old, and were born in the era of digital technologies, which come to them naturally.

Never in the history of humankind has there been a single (short) period where outlooks on life, personal and global histories, differences in thinking, approaches, objectives, values, differences of opinions, and views on surrounding circumstances have varied so much.

4.2. Differences between Generations

Definite generational differences are noticeable. These are caused by the immediate and general environment. Because of these significant generational differences, the factors that shape, and the technologies that impact, different generations have been specified. These are illustrated in Table 3.

Table 3: Differences between Generations X, Y and Z based on external factors

Generation	X	Y	Z
Birth period	1965-1980	1980 - 1999	2000+
Age	51-37	36-17	16 and younger
Major global events	➢ End of Cold War ➢ Vietnam War ➢ Fall of the Berlin Wall	➢ Technology ➢ 9/11 terrorist attacks ➢ Social media ➢ Google	➢ Global crisis ➢ Mobile devices ➢ Arab spring ➢ Data cloud
Device most frequently used	➢ TV set ➢ Desktop computer	➢ Smartphone ➢ Laptop	➢ Tablet ➢ Smartphone
Most frequent communication methods	➢ SMS ➢ Phone ➢ e-mail	➢ SMS ➢ Social media ➢ Online media	➢ Social media ➢ Online media
Technologies	➢ Tool that I use	➢ Perfect tool that I use	➢ Real world and virtual reality are interwoven
Feeling of security	➢ Permanent job ➢ Skills	➢ Skills ➢ Money	➢ Relationships
Work outlook	➢ Career ➢ Job	➢ Work-life balance	➢ Working at home ➢ Multitasking
Major characteristics	➢ Flexibility ➢ Individualism ➢ Scepticism towards authority ➢ Job security	➢ Technological convenience ➢ Global communications ➢ Optimism ➢ Freedom ➢ Flexibility ➢ Multitasking	➢ Distrust of political systems ➢ Permanent connection with the Web ➢ Freedom ➢ Mobile generation

Source: Own study on the basis of: (X,Y,Z: sztafeta pokoleń na rynku pracy, 2013), (The 2016 Deloitte Millennial Survey. Winning over the next generation of leaders, 2016), (SEAWORLD STRATEGY INNOVATION 2015, 2015).

4.3. Characteristics of Generation Y

Generation Y was born in the 1980s and 1990s, i.e. it refers to people in the 17-36 age bracket. This is the post-revolutionary generation, and does not completely accept the existing law and order (Bomba, 2008). In the case of Poland, this is a group of young people who do not remember the old political system, only the new one. This generation is strongly oriented towards technology, especially the latest technology (Rusak, 2014). Generation Y cannot imagine how their grandparents managed without e.g. smartphones, tablets, computers (including laptops), the Internet, Facebook and instant messengers (e.g. Snapchat, WhatsApp). Unlike the previous Generation X, Generation Y has no inhibitions about asking questions, and constantly investigates interesting new things. Generation Y is open to other cultures and is curious about the surrounding world, as the omnipresent Web has made

this possible. The Web minimizes barriers to communication, regardless of the geographical location of those who want to explore the world.

Generation Y will soon account for approximately 75 per cent of the global workforce (Pokolenie Y oczekuje, że biznes będzie rozwiązywał problemy świata, 2015). As well as driving the labour market, they are becoming the major consumer group. As a consumer group, they differ from every other one so far in that they have ready access to the Web and have penetrated it more. Consequently, they shop online (at Web stores) and offline (at brick and mortar stores). There is therefore a potential opportunity for e-Commerce to expand more rapidly.

As they are familiar with new technologies and constantly use them, these new consumers represent enormous purchasing power. They expect business to meet their demands for digital experiences through various distribution channels, especially in a digital (non-material) form.

5. THE USE OF MOBILE APPLICATIONS IN THE GROUP OF GENERATION Y

5.1. Questionnaire composition and test group

The online questionnaire survey was conducted to investigate the direction of growth of the online market.

The questionnaire was designed to examine Generation Y in terms of its use of mobile applications.

The aim was to find the mobile application most frequently used by the younger generation.

The questions were divided into sections concerning: ownership of mobile devices - 3 questions with a choice (Yes or No), evaluating knowledge of mobile applications - consisting of a Likert scale (from 1 very weak, to 5. Very good), the frequency of use of mobile devices - 1 question in a Likert scale (from 1 Rarely to 5. All the time), the use of mobile applications such as games - the question of choice (Yes or No), the frequency of using mobile applications such as games - 9 questions in Likert scale (from 1 Never, to 5 daily), open question for other used games for mobile devices, The use of different mobile applications - the question of choice (Yes or No), the frequency of using various mobile applications - 103 questions in Likert scale (from 1 Never, to 5 daily), open question for other applications used on mobile devices, the desirable characteristics of mobile applications - 9 choice questions (1. Yes, 2. no 3. Do not know), final two questions had to do with gender and age.

Questions about the frequency of use applications are generally made operational in order from most common among the rarest (5, every day, 4. frequently, 3. from time to time, 2. rarely, 1. never).

The sample comprised 116 people. Those aged 18-25 (101 people, of whom 41 were men and 60 women) were separated.

5.2. Results

The results showed that 90.1% of the respondents had a smartphone, 13.9% had a palmtop, and 50.5% had a tablet. This shows the popularity of mobile devices among the younger generation. Their personal assessment of their knowledge of mobile applications is good (42.57%), average (33.66%), and very good (14.85%). Only 8.91% assessed their knowledge at a low level (poor – 5.94%, and 2.97% - very poor). Significantly, more than half (51.49%) the respondents use mobile devices all the time, 30.69% very often, 9.90% often, and only 7.92% rarely.

Only 28.71% of the respondents declared that they did not play games on their mobile devices, while the remaining 71.29% declared that they did. The most popular games in the questionnaire (Angry Birds, That level Again, Quizowanie (Quizzes), Worms 4, Plant vs. Zombies, Minecraft, Draughts, Chess, and Hill Climb Racing) were: 1. Quizowanie (Quizzes); 2. Angry Birds; and 3. Hill Climb Racing. The most frequently selected game (65.28% of respondents) was Quizowanie (Quizzes) (22.22% Rarely, 23.61% From time to time, 15.28% Frequently, 4.17% Every day). Games 2 and 3, by contrast, were played rarely. Game 2 was played by 58.33% of respondents (31.94% Rarely, 19.44%

From time to time, 5.56% Frequently, 1.39% Every day). Game 3 was played by 38.89% of respondents (9.72% Rarely, 18.06% From time to time, 9.72% Frequently, 1.39% Every day).

Other games were selected occasionally. Those mentioned by the users more than a couple of times included SimCity BuildIt, Candy Crush Saga, 2048, Plague Inc., POU, Minion Rush and Millionaires.

Of the 103 mobile applications listed, the younger generation most frequently used Google Chrome, YouTube, Gmail, Google Maps, Google Translate, Facebook, and Messenger. One Polish application, Allegro (developed by the company of the same name), was also on the list. The top 8 most popular applications are presented in Picture 2.

Picture 1: Applications most frequently used by Generation Y
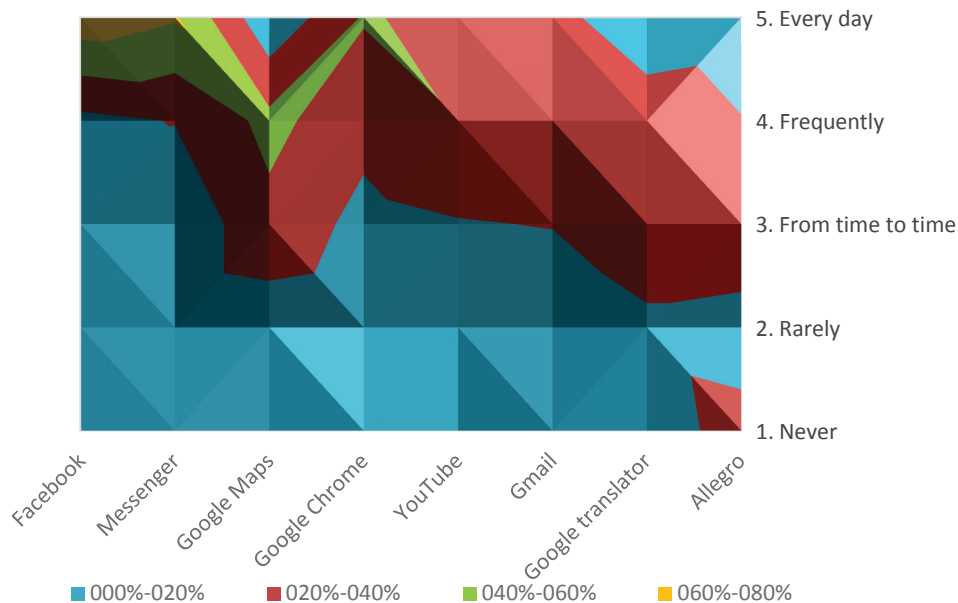
Source: Own study

Other applications mentioned by the users more than a couple of times included: mobileMPK, Netflix, Uber, eBay, moBILET and reddit.

The final section of the questionnaire contained questions regarding the desirable features of a mobile application. These are listed in Picture 3. For generation Y are important things such as:
- involvement of users by the network (generation of smartphones and tablets),
- free version - Generation judging that all should be free for them. This confirms the negative answer to the question about the application PRO version, which are often purchased by older people with a permanent income.
- be innovative (generation Y like technical innovations).

The survey also shows the division of the study group to the question concerning the amount of data to be entered. Where respondents prefer entering a small amount of data had 37.62% compared to 43.56% who have no compunction about typing more of their data.

The survey also shows the importance for such characteristics as safety, functionality and intuitiveness, which are important for the whole society, not just the young generation.

Picture 2:. Characteristics of a good application, according to Generation Y.
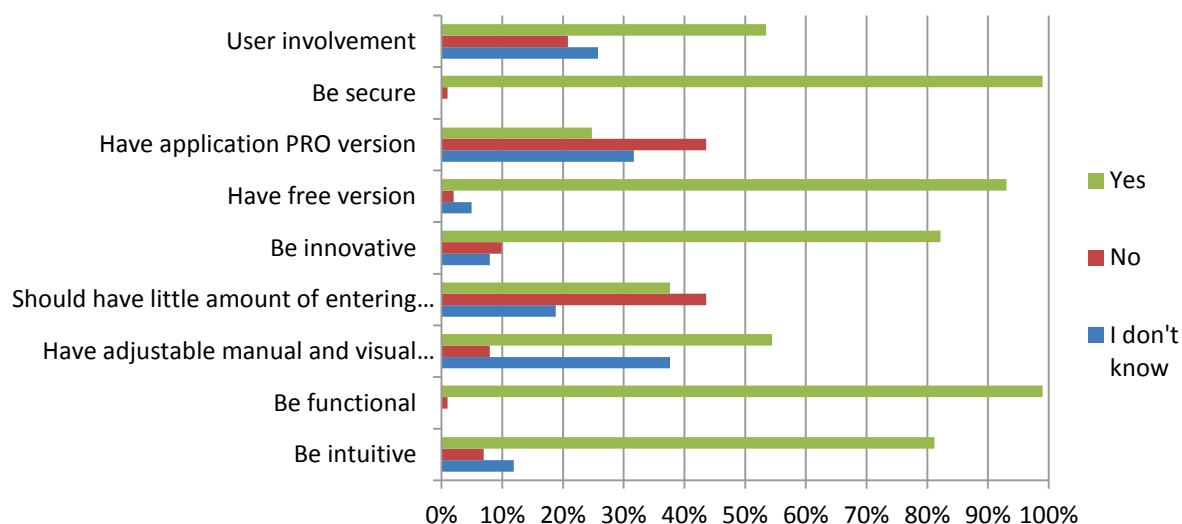
Source: Own study

6. CONCLUSIONS

The information acquired from the questionnaire survey concerns the mobile applications used by Generation Y, and also presents the desirable features of a good mobile application.

The conclusions concerning applications show that the mobile application segment was dominated by global giants such as Google and Facebook. The Allegro shopping portal only came after that. The situation with entertainment applications was similar. The most popular game was a game based on Facebook. Other entertainment applications were less frequently used.

Mobile applications used for communication have greater potential. These include: Facebook, Messenger, Youtube, Gmail, and Google Translate. They probably owe their popularity to their being widely distributed on stationary devices (except for Facebook Messenger). Between the above-mentioned applications, there was one web browser Chrome, probably due to the best adapted for the mobile devices and the overall global domination.

The respondents also claimed that applications should: involve the user, be secure, have a free version, and be innovative, intuitive and functional. They also emphasized their uncertainty as to manual and visual layout, and about having a PRO version. This underscores their reluctance to have a PRO application, which is most likely due to their unwillingness to spend money to have applications enhanced and extended. The opinions for and against applications having a little or a lot of data storage space were also fairly evenly distributed.

It can therefore be emphasized that Generation Y makes significant use of mobile solutions, mainly for communication and acquiring information, by using modern technologies, such as mobile devices.

The survey revealed certain areas that need to be refined. Further research also needs to be conducted in other countries, so as to identify the cultural and economic differences that might occur between different regions. The survey would also allow some universal regularities to be identified.

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