IMPLEMENTATION OF MOBILE APPLICATIONS ON THE B2C MARKET – THE ANALYSIS OF CASE STUDIES

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Abstract

New technologies and mobile devices determine the way in which consumers acquire new information, undertake commercial transactions and shape purchasing behavior. Mobility and interactivity of communication imply a number of changes in the functioning of both enterprises and social life. The aim of the paper is an attempt to indicate the impact of mobile technologies on communication strategies and customer's behavior. The cognitive purpose of the study is to characterize the functionality of the selected mobile applications for planning a trip. Due to the aim of the research case studies analysis have been conducted. The article provides the examples of applications relating to search for hotels and restaurants, interesting architecture, car rental, taxis and those that facilitate movement in the city.

Key words: *ICT, mobile applications, mobile technology, mobile communication, technological innovations*

1. INTRODUCTION

Mobile communication has become mainstream and even omnipresent. The impact of mobile technologies has affected social networks, other communication strategies, traditional forms of social organization, and political activities. It increasingly occupies center stage in peoples lives around the world (Katz 2008). The spread of mobile communication, increasingly in wireless devices, is affecting people's lives and relationship. Smartphones speed the pace and efficiency of life, but also allow more flexibility at business and professional levels. Organizations have been constantly using technological innovations as an important strategy to maintain or enhance their competitiveness in business. Information and communication technology (ICT) is playing an ever-widening role in an organization's sustainability of competitive advantage. Thus, wireless Internet services via mobile technology (WIMT) adoption which includes use of all types of web-enabled mobile devices is becoming an unavoidable organizational trend (Lu, Yao & Yu 2005, p. 262).

New technologies and mobile devices determine the way in which consumers acquire new knowledge, undertake commercial transactions and shape purchasing behavior. The role and impact of market communication strategies and corporate image building has been one of the most important topics for discussions in recent years (Riel 1995; Gray & Balmer 1998; Smith & Taylor 2004; Keller 2013). In turn, the subject of interest for many researchers is mobile technology in communication processes and trust in mobile commerce (Siau & Shen 2003; Hoffman, Novak & Peralta 1999). The era of mass communication integrated in a mobile device (e.g. Smartphone, tablet) has come. Today we live in a world called the Post PC era, and more and more social groups conduct communications via mobile devices. Enormous opportunities offered by mobile devices and applications will be increasingly used in communication with the target audience (Badzińska, Gołata & Szczepański 2015, p. 40).

The main objective of the publication is an attempt to indicate the impact of mobile technologies on communication and customer's behavior relating to tourist services and movement in the city. The cognitive purpose of the study is to characterize the functionality of the selected mobile applications for planning a trip. Due to the aim of the research case studies analysis have been conducted. The article provides the examples of applications relating to search for hotels and restaurants, interesting architecture, car rental, taxis and those that facilitate movement in the city.

2. MOBILE TECHNOLOGY – CONCEPTUAL BACKGROUND

Rapid development of multimedia applications and increased functionality of mobile devices both cause service convergence, which is manifested in offering an increasingly comprehensive services available through mobile devices. The use of mobile technology in the communication process on one hand translates into a possibility of transferring the current offer of goods and services to customers, and on the other hand it changes the patterns of social communication and determines the roles of entities participating in this process. Mobile technology has changed the relationship of participants in the communication process from 'separation' to 'integration and networking,' and the distance between them has lost its significance. Turning to the user, called a participatory turn (Jenkins 2006), means not only the transfer of emphasis from the sender to the recipient, but also a new face of market communication: an increase in the importance of each potential user of new media. The popularization of technology and mobile devices urges users to search for new information and create connections between content distributed in different media, which in turn, contributes to building a network society.

Mobile technology is the technology used for cellular communication. Mobile code division multiple access (CDMA) technology has evolved rapidly over the past few years. Since the start of this millennium, a standard mobile device has gone from being no more than a simple two-way pager to being a cellular phone, GPS navigation system, an embedded web browser, instant messaging client, and a handheld game console. It includes the use of a variety of transmission media such as: radio wave, microwave, infra-red, GPS and Bluetooth to allow for the transfer of data via voice, text, video, 2-dimensional barcodes and more (Daichendt 2015). Mobile technology leads to great flexibility and mobile-to-mobile convergence (MMC) facilitates the interoperability of mobile communications devices without the need for any fixed capabilities or proprietary service provider. In MMC, a single cellular telephone, Smartphone or softphone-equipped device can switch automatically between Wi-Fi and cellular networks (mobile-to-mobile convergence 2015). The modern devices use a sensor touch interface, which enables the user to access all the functions through the use of finger touch. The new generation of Smartphones is context-aware, taking advantage of the growing availability of embedded physical sensors and data exchange abilities.

Mobile technology affects the way people interact when face-to-face or, rather and increasingly, face-to-face-to-mobile-phone-face, since people are ever more likely to include the mobile phone as a participant of communication (Katz & Aakhus 2002, p. 2). The mobile phone is a quintessential instrument of two-way interpersonal communication. Wireless Internet services are available of implementation via mobile devices and technologies such as PDAs (personal digital assistants), 3G and 4G mobile phones. The term for these type of services is mobile data services, covering communication services (e.g. emails, short message services), Web information services (e.g. weather information, sports, stock quotes), database services (e.g. telephone directories, map guides), entertainment (e.g. games, ring-tones), and commercial transactions (e.g. banking, stock trading, ticketing, online auction) (Massey, Khatri & Ramesh 2004). The web services seem to have the right success factors – right price, quick and easy to use. Research indicates that wireless mobile Internet services are for convenience and efficiency (Siau, Nah & Sheng 2004). The degree of easiness of use and learnability of different mobile phones perceived by the customers is recognized to be an important determinant for using wireless Internet services via mobile technology (WIMT). This point was supported by several studies on mobile data services and mobile commerce (e.g. Ziefle 2002; Massey, Khatri & Ramesh 2004; Siau, Nah & Sheng 2004;).

The 3rd Generation Partnership Project (3GPP) – Long Term Evolution (LTE) – is the latest standard in the mobile network technology for wireless communication of high-speed data for mobile phones and data terminals. It is based on the GSM/EDGE and UMTS/HSPA network technologies, increasing the capacity and speed using a different radio interface together with core network improvements. LTE has the ability to manage fast-moving mobiles and supports multi-cast and broadcast streams (LTE Encyclopedia, 2015). The Mobile Industry is innovating and inventing its way to new pervasive always-on, always-connected broadband 5G services. Regarding to IEEE Communications Society, as the next step in the continuous innovation and evolution of the mobile industry, 5G will not only be about a new air interface with faster speeds, but it will also address network congestion, energy

efficiency, cost, reliability, and connection to billions of people and devices. Realizing these services is not trivial, because challenges to target x1000 higher throughput of 1 Gbps will need new antenna/RF technologies (wider bandwidth), deployment of small cells in higher frequencies (mmWave), shorter transmission time intervals, reduced latency, and new modulation methods besides OFDM (Neira 2015).

3. MOBILE APPLICATIONS ON THE MARKET OF TOURIST SERVICES

According to Talukder and Yavagala, applications can be divided into the following categories: personal, informative, transactional, localization, business and entertainment (Piechota 2014, p. 120). In contrast, due to the range of available information, the applications designed for trip planning can be divided into the following categories:

- city applications (mainly play promotional role),
- applications of selected tourist facilities,
- applications for accommodation offers,
- applications helping to move around a city.

Mobile applications of Polish cities in addition to promotional functions also act as mobile guides. According to mobirank.pl (2015), such a guide should be characterized by the following traits:

- interface transparency,
- the availability of information about the history and sights of the city,
- integration with a map and navigation,
- access to current news, weather and attractions of a given site,
- the possibility of buying / booking tickets for events, transport, hotels, restaurants,
- the ability to co-create content for the users of the application,
- availability for the most popular mobile platforms,
- the possibility of foreign language versions,
- the ability to create one's own plan of sightseeing, or to use a ready-made one,
- integration with hotels,
- access to contact information,
- information about both free and paid Wi-Fi networks in the city.

Among the best rated city applications (according to Mobile Trends Awards 2015) there is that of Biala Podlaska city (Fig. 1). This application provides information about the most attractive places in Biala Podlaska and its neighborhoods. It is a comprehensive guide containing information about accommodation, sports and recreational facilities, monuments, parks, eateries, gas stations and places intended for families with children. GPS technology in use also makes it easier to navigate tourist routes, and each route has information about the length and alleged travel time. The mobile guide also includes events and news modules. The application works offline, and the Internet connection is only required for updating (bialapodlaska.com 2016).



Fig. 1. Biała Podlaska application

Source: https://play.google.com

'Toruń' mobile application is a fact finder about the city prepared for both locals and tourists (Fig. 2). It includes current information regarding the city life, including a calendar of events with descriptions, dates and locations of these places with the determination of route or directions using the GPS system. The app also includes public transport timetable and is integrated with the program to purchase tickets. It also facilitates calling a taxi. The application includes descriptions and locations of such places as: diners, accommodation, shopping centers, entertainment, and attractions for tourists. The augmented reality function displays objects from selected categories located in the camera field of vision. There are also such services as weather forecast and such social functions as assessment, share and report. The application works offline, and some elements including data updates require an Internet connection (www.torun.pl/pl/miejska-aplikacja-mobilna 2016).

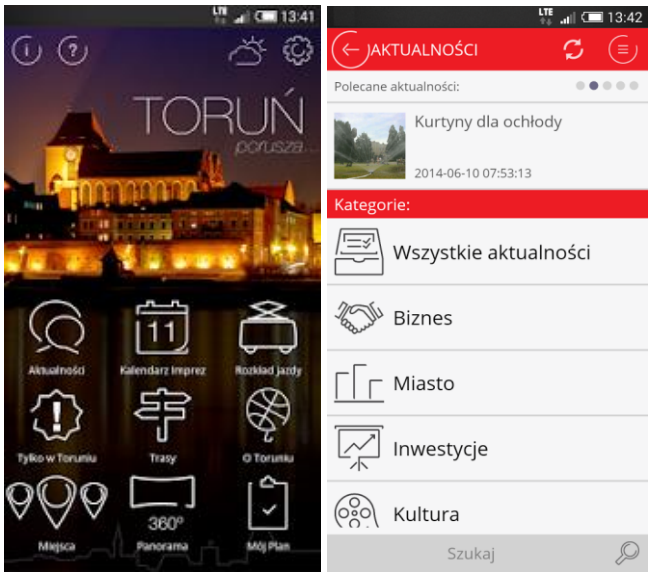


Fig. 2. Toruń mobile application

Source: https://play.google.com

The second group of applications includes those about certain facilities. One such application is Google Goggles (Fig. 3). It makes it possible to find information on the Internet with the help of visual search. The application analyzes photographed objects, enters a query into a search engine and provides all related information on the topic. Image database is constantly updated and allows users to identify specific areas and places (Kalecińska 2013, p. 29).



Fig. 3. A Google Goggles application

Source: https://play.google.com

The next category of tourist applications involves those on moving around the city. One of them is iTaxi, which operates in the following largest Polish cities: Warsaw, Lodz, Krakow, Wroclaw, Poznan and Tricity (Fig. 4). The application has a clear and simple interface. Registration is required. The software determines the location of the user and presents available vehicles nearby. Its user sees a brief description of the price per kilometer (according to night or day rate) car model and the estimated time of arrival. The application gathers taxi drivers from various corporations and also independent ones. This means that there is no fixed price for a given ride. After selecting a taxi one must obtain the confirmation of the ride. If a driver accepts the ride, the application shows the user a map and the route this taxi follows, as well as the time of the journey. The application enables to accept payments for the trip both in cash and with credit/debit cards (http://iTaxi.pl 2016).



Fig. 4. iTaxi.pl application

Source: https://play.google.com

The same possibility of payment is offered by another application – MyTaxi. The range of functions is similar to the above mentioned application. The user orders a taxi, and the driver must accept the order. After accepting, the passenger receives information about the location of the taxi and the driver identification data. The system also provides an assessment of transport services of a given driver and the price. The advantage of this application is the possibility of non-cash payments such as: MyTaxi system, one-off vouchers and packages for companies. The disadvantage of MyTaxi is its restricted range in Poland. It works in Warsaw and Krakow (https://pl.mytaxi.com 2016).

Travel planners (especially in the field of national and city transport) may include such applications as e-podróżnik (e-traveler) and jakdojade.pl. E-traveler (Fig. 5) can search for rail and bus connections and intercity public transport in the following ten Polish cities: Warsaw, Krakow, Katowice, Tri-City, Poznan, Szczecin, Białystok, Lublin, Lodz and Wroclaw (http://softonet.pl 2016). This application's interface is simple and transparent. The main screen is a search engine in which one specifies the starting point of the trip, date, time of departure, and destination. Suggested means of transport should also be provided, followed by the type of journey and the way search results are sorted (http://softonet.pl 2016).

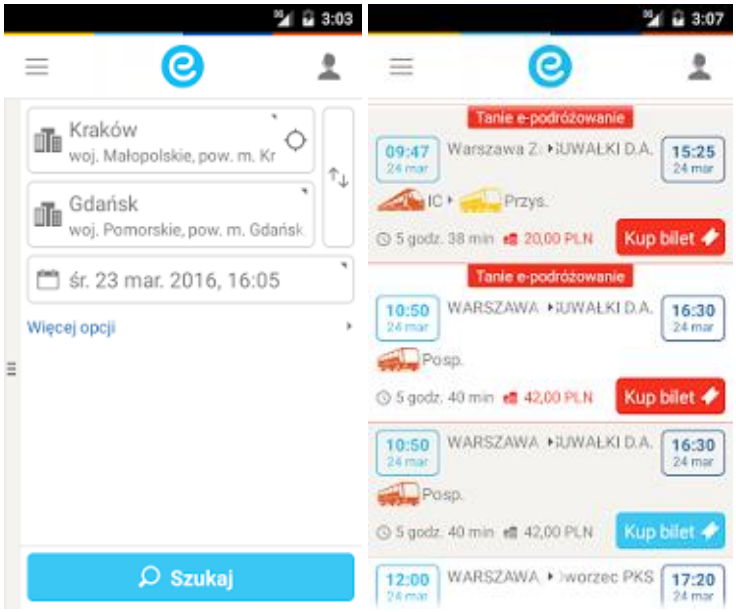


Fig. 5. E-podróżnik.pl mobile application

Source: https://play.google.com

In the options menu one can browse through stops. Program settings allow one to choose the language (Polish, English, German), and include data transfer saving features or enable notifications about payments. The starting point of the planned route can be entered manually or via a locating function. The destination must be entered manually or with the use of a hint system. Point identification can also be carried out using the map. A detailed description of the route includes a lot of additional information, e.g. price, the exact course of the journey, or the types of carriers. One of the more essential functions of e-traveler is the possibility of purchasing tickets. In order to use it, one must register via a website (http://softonet.pl 2016).

An application for planning journeys using public transport is called Jakdojade (Fig. 6). The planner allows to specify the starting point and destination and additional trip details (which bus to take, where to change). This information is provided in real time. The system takes into account all changes in the timetable of urban fleet carriers (www.city-nav.com 2016).

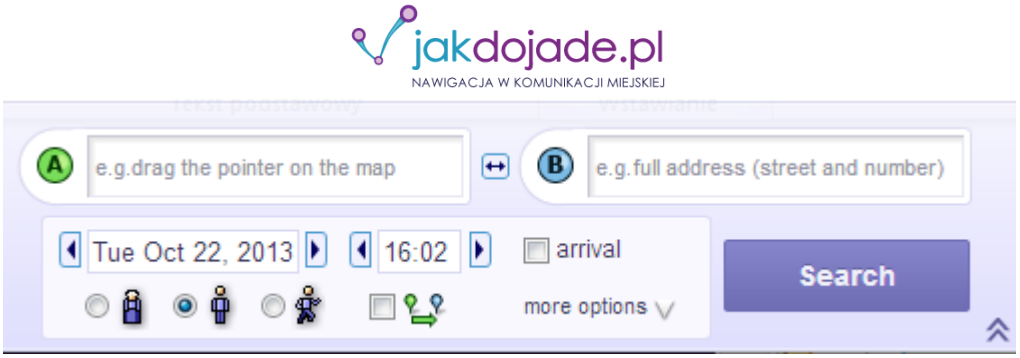


Fig. 6. Jakdojade mobile application

Source: www.city-nav.com

Both storing and searching for connections is done via servers and databases which belong to City-Nav Ltd. Users access them through a website, a mobile version, and a native application that can be used by mobile phones (www.city-nav.com 2016). This application is responsive, which eliminates the problems of adapting to different screen resolutions on mobile devices. Jakdojade.pl in its mobile version, in addition to graphic design and a readable layout, will also have five language versions (Polish, English, Japanese, French and German). For now, only two of them are available, but they are working on introducing the new ones (Kubiak & Skawińska 2015, p. 190). The application is popular in most Polish cities. There is a planned expansion to foreign markets, especially to Germany.

4. CONCLUSIONS

An increasing role of mobile technology results in significant changes in the field of communication. Mobile commerce is penetrating into various aspects of our life due to the latest improvement in wireless Internet services via mobile technology. Modern mobile devices make it possible to process, receive and use different data. The development of mobile technology creates new patterns of consumer behavior. The Smartphone has become an integral part of consumers' lives. The large potential of new communication channels makes the travel industry increasingly use them in their businesses. For travel agents, tour operators, hotels and city governors it is becoming an important marketing tool. Applications installed on mobile devices facilitate the search for information about the place of destination. These applications perform a variety of functions, but their main task is to facilitate tourist travel. They allow tourists to get to know different monuments, analyze walking routes, book accommodation and opinions about hotels, convert currency or watch video materials regarding events organized in the region. The advantage here is the limitlessness of the available information. In addition to their planning functions, the applications also constitute tools for presenting the offers of carriers and travel agents.

The effectiveness of the mobile communication process requires constant adaptation to individual customer needs, which is why the role of new technology and mobile devices and their impact on cultural changes and the evolution of the information society will continue to be one of the most important topics for scientific considerations.

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