

## The Role of Knowledge Management in Mobile Marketing

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### Abstract

Mobile terminal devices and mobile networks enable mass customization for individual customers, and pursuant to this, mobile marketing represents the last stage of segmentation leading up to the individually customized marketing, i.e. „one-on-one marketing“. Mobile marketing refers to using an interactive wireless medium with the purpose of providing customers with personal information, having time and location dimension, promoting goods, services and ideas, thus generating value for all stakeholders. On one hand, mobile medium has completely transformed present day notion of marketing campaigns and has opened up a range of new opportunities for advertisers, and on the other hand it has put new challenges before companies whose CRM and KM systems are not well adapted to new requirements of mobile marketing. With the trial research which included 62 students who were subjected to two week mobile advertising campaign we tried to detect factors to help us answer the question on how to successfully run mobile marketing campaigns, what to consider while using tools and knowledge provided by Knowledge Management and Customer Relationship Management.

**Keywords:** Knowledge Management, Customer Relationship Management, Mobile Marketing, Tool

### 1. Knowledge management

Knowledge management is defined as a „process used by organizations for generating new value from intellectual sources or knowledge-based sources“. Very often this knowledge management process includes sharing newly created knowledge among employees, departments, even among companies. It needs to be noted that this definition does not mention anything about information technologies. It often happens that in some analyses knowledge management is integrated with information technology, but that not what knowledge management is about.

The concept of knowledge management has developed in mid 80's when Davenport and Prusak published some of their works on knowledge management which ended with their famous work „Working Knowledge“ [1]. Since its beginning, knowledge management has had its ups and downs, but lately it has been mentioned as one of the „salutary“ tools in modern management. Market competition allows for many techniques and tools enabling gaining competitive edge, and knowledge management is one of them.

The other definition states that „knowledge management represents the ability of a community within an organization to make records on any critical knowledge (i.e. of the greatest importance), improves it and in a best possible manner shares and distributes this knowledge among those members of the organization that require it and that may use it in their work“ [2]. According to this definition, this could be a major issue for information technology companies drawing their knowledge from the Internet, which is why these companies need knowledge management.

At the present stage of knowledge management there is still no widely accepted general methodology for developing knowledge management system. In this area knowledge is still being acquired by developing methods and techniques aimed at solving particular issues.

Knowledge has a long history of being considered a decisive competitive weapon for company survival on the market. In practice, numerous companies, including those dealing solely with marketing, that have managed to organize their knowledge achieved business success and enhanced their performance [3].

## 2. Knowledge management in marketing

Marketing and knowledge management overlap in many significant ways, but according to some authors dealing with both these areas, there is too little overlapping in the actual practice. Marketing conducted researches should be the main „provider“ for knowledge management providing views on client demographics, psychology and behavior that might be of importance within customer transactions, relationship strategies and tactics [4].

Knowledge management should be the main provider of knowledge for marketing communications, knowledge enabling precise targeting of customers and choosing communication channels, as well as creation of „response-promoting“ materials. Application of knowledge management is shown in table 1.

Part of CRM	Focus on	Knowledge needed	Benefit from Knowledge management
CIM customer interaction management	transaction between customer and company	- knowledge about customers and their segments, based on how they respond to various activities undertaken by customer interaction management	can provide the company with the right information, at the right time and in the requested form for its customer, can improve sales efficiency, marketing efficiency and customer support
CEM customer experience management	transaction between customer and company	- knowledge to understand what the expectations of a customer or customer segment are, and what will please the customer, as opposed to what would displease them in the course of a transaction, - knowledge is the knowledge necessary for understanding relative value, actual and potential of an individual customer or customer segment.	can provide knowledge that is used for customizing transactions to a customer, can provide knowledge for customizing additionally offered products and services.
CSM customer success management	continued relationship with customers	- knowledge enabling better understanding of customers and ways for motivating them, - knowledge of what a customer expects from their relationship with a company, what encouraged them to choose one company over another, - knowledge what encouraged them to participate in transactions with a particular company.	can provide knowledge needed for researching customers' issues, their goals, together with their needs and wishes and due to the potential of this knowledge it is possible to determine the basic price of a product or service in a better and more precise way thus contributing to greater unit gain from that product.

Table 1. Application of knowledge management in CRM [4]

As presented in table 1, knowledge management can ensure key knowledge to customer relationship management. Combined customer relationship management and knowledge management grow into CKM – customer knowledge management [5] which first and foremost focus on knowledge from the customer. Customer knowledge management can give us knowledge about customers, in fact, knowledge what our customers know. Role of

customer becomes more active, and from collaboration with him is possible to create new value.

### **3. Knowledge needed for marketing**

Marketing requires knowledge on customers, and their wishes, about competition, products, distribution channels, service providers, laws and legal provisions, as well as knowledge on marketing practice in general. Prior to being transformed, and in this form applied to useful activities, this knowledge needs to be stored in a knowledge database. Marketing required knowledge [6]:

1. Knowledge on customers and their wishes
2. Knowledge on competition and their products
3. Knowledge on distribution
4. Knowledge on laws and legal provisions

Knowledge under 1 and 4 are the ones that can be gathered by a company itself, from its own business activities, and knowledge under 2 and 3 refers to knowledge acquired by means of a specific research. Knowledge on customers helps to understand customers, and understanding customers again leads to better decision making, e.g. knowledge on factors influencing a customer and its behavior, when combined with existing practice can produce an excellent marketing strategy.

Contrary to this, tacit knowledge is stored only in the individual mind and it is not subject of transfer, in this case to vendors. Individuals are primary storage of tacit knowledge that is difficult to shape and exchange among company departments. E.g. knowledge that vendors have on customers is usually tacit, personal and anecdotal, and it is beforehand associated with particular situations. Similarly, most knowledge on parties is tacit and it is transferred in conversation or during learning at the very place of work (and therefore it is not protected by intellectual property law, which is why individuals coming into possession of such knowledge have practically no legal remedies at all enabling them to prove their ownership over knowledge.). It needs to be noted that activities targeted at company downsizing and reorganization result not only in reduced quantity of tacit knowledge, but also discourage those reluctant to share their (in terms of business policy valuable) knowledge with others. It may happen that this tacit knowledge required for marketing decreases in the course of downsizing and reorganization, which is exactly why it is necessary to collect it. Tacit knowledge of company-leaving employees can be saved by inviting them to hold seminars that will be recorded and added to company knowledge database.

Collecting knowledge on customers does not make too much sense if this knowledge is not shared with colleagues and people that „require it“. For this reason passive database that simply store data are not adequate for this type of tasks, but they rather need to be designed to enable sharing data for all relevant parties.

In practice, data required for analyses are usually available to managers or smaller leading teams, and reports and presentations of gathered knowledge and data are being periodically prepared. Good organization is essential, so notifying applications should be designed to enable publishing news in the form of newsletters, offering a brief description of news, where a user can read the entire news when necessary.

### **4. Knowledge needed for mobile marketing**

In recent years marketing potential of mobile devices has been recognized by many companies seeing a mobile medium as an opportunity for establishing a new form of communication with its users, and it can be seen in the Table 1 showing world-wide penetration of particular technological devices according to data from the end of 2007 and beginning of 2008 (source DZS, [www.dsz.hr](http://www.dsz.hr)). Also, data published by Gartner in its report from August 2008 stating that advertising market will be worth \$12 billion by 2010, leads us

to conclusion that mobile advertising is about to become one of the most important forms of advertising in the course of next few years.

Gopal and Triphati [7] have proposed a model of mobile advertising outlining major players in that process and describing their roles. The model can be seen on Figure 1.

This article deals with all three factors in the process of mobile marketing: vendor (advertiser), customer (ad recipient), and mobile operators, as well.

Device	Number	Penetration
Car	1.491.127	0,34
TV	1.193.509	0,27
Personal computer with Internet connection	1.984.850	0,45
Mobile phone	5.035.000	1,13

Table 1. Penetration level of particular technological devices in Croatia at 1.1.2008. (source DZS, www.dzs.hr)

#### 4.1. Vendors

Okazaki [8] has suggested a framework for adopting mobile marketing for vendors (Figure 2), involving 6 factors that should be investigated by each company prior to implementation, namely brand strategy (e.g. some brands are created for conservative population that would not react well to mobile marketing), Facilitating conditions - representing individual belief that organizational and technical structure exist and that they support system usage), Location based advertising that some authors such as Ahonnen and Barrett [9] consider a killer application in mobile marketing), costs of servicing and services (in comparison to other media such as TV, radio, newspapers), regulatory and legal framework, as well as cultural barriers.

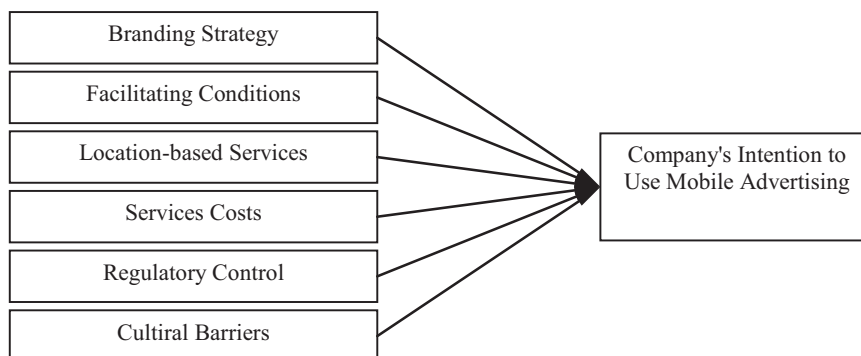


Figure 2. Company's intention to use mobile advertising, adapted from Okazaki [7].

#### 4.2. Customers

With Fishbein and Ajzen [10] publishing their Theory of Reasoned Action – TRA began construction of different models linking cognitive characteristics of users with behavioral intention. The most recent model containing fundamentals of the Roger's model from 1985 has been created by Tanakinjal et al. [11] and it is called the revised model of decision making for users adopting technological innovation (Figure 3), and unlike basic Rogers model it has an additional sixth factor in the adoption chain, namely safety [12]. Characteristics of the first two factors influencing user decision to adopt new technology or service have also been revised.

When, used, notion of „adoption“ in scientific papers published in the last few years, attempting to provide explanation for user behavior, often has similar or related meaning as following terms: uptake, acceptance, acquisition, implementation, assimilation and usage of particular innovation in the field of technology. Stated terms can indicate particular specific stage or process when adopting new technology. Level of adoption of some innovation

depends on the characteristics of individual groups of respondents in a survey [13], [14], [15], [12], such as:

- cultural and demographic values and beliefs (influencing user perception regarding some new service),
- roles of similar previously implemented services and applications (their spread and popularity influence user attitudes with regards to new similar application),
- certain complex inner personal characteristic of potential users, varying depending on the context in which they are found,
- social characteristics of individuals, as well as their environment (regulatory rules, confidence in laws, etc.).

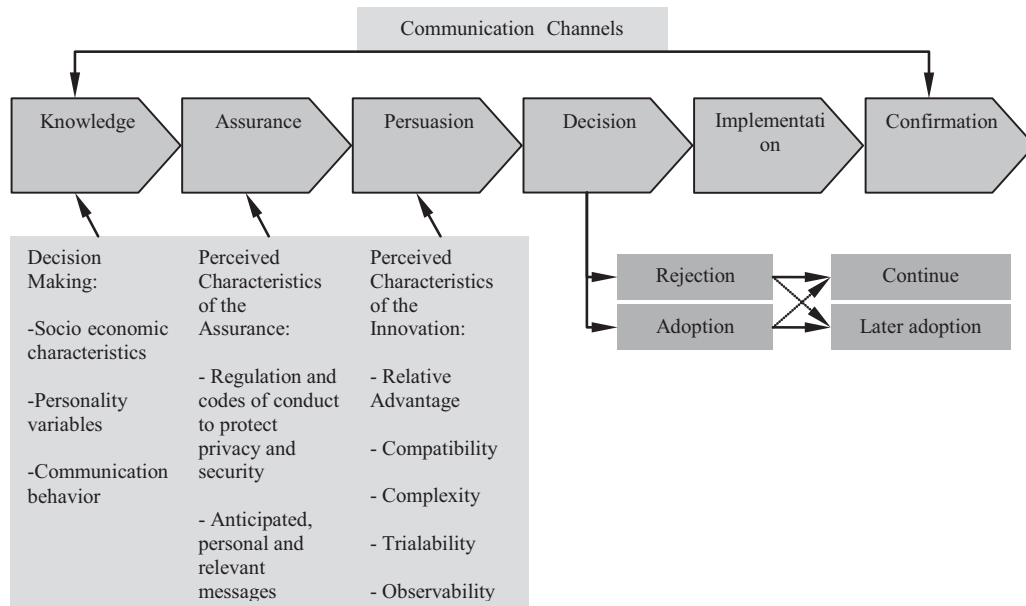


Figure 3. Revised technology innovation-decision process model for mobile marketing, adapted from Tanakinjal et al. [10].

Results of the empirical study on accepting four different mobile services (text messages, contact, payment and games) on 2038 respondents conducted by Nysveen et al. [16] showed that perceived enjoyment, perceived usefulness and perceived expressiveness have a strong comprehensive influence on user intention to use mobile services. On the other hand, Bauer et al. [17] in their survey conducted on a sample of 1028 respondents identify value of message content (with special emphasis on two aspects of contents, namely extent to which message is amusing and informative) as the initiator of mobile advertising adoption. They concluded that users will have a positive attitude towards mobile advertising that is strongly correlated to their behavioral intention only if the received message is creative and fun, or if it provides important information.

Drossos et al. [18] have demonstrated that the campaign performance is influenced by user environment at the moment of receiving a mobile marketing message, which means that place (location), time and other contextual factors influence the cognitive intensity with which some user participates in a campaign. Pura [19] did some research on location mobile advertising and concluded that conditions surrounding a user, i.e. so called user context has a significant influence on accepting a mobile advertising campaign. Obligations of users at the moment of receiving a message correlate to their potential participation in the published campaign. Unni and Harmon [20] demonstrated that users are concerned about using their privacy in location mobile advertising campaigns, and they have also established that there is a slightly lesser response of users when it comes to promotional campaigns, than when it comes to brand campaigns. Haghirian et al. [21] have established that value of advertising message (contents, benefits, etc.) has a significant influence on user attitude towards mobile

advertising. Gopal and Tripathy [7] have managed to prove, using an experimental method, that distance between a shop and a point of delivery of message to a user are causally connected, and that value of coupons (discounts) received by users during a campaign correlates to their participation in campaigns. Merisavo et al. [22] have demonstrated that there is a connection between user perceived safety and trust and the adoption of mobile advertising.

Service providers, i.e. companies that are future users of mobile marketing are faced with a challenge how to successfully implement mobile marketing campaigns, considering new requirements of users in this respect and lack of relevant data on prior mentioned important factors influencing how mobile marketing is going to be accepted by users. Thus there are new requirements concerning a different approach for filling CRM database with data detected as essential for some campaign to be successful, and the answer to this can be given by knowledge management.

## 5. MCRM

MCRM is an expanded CRM with the addition of mobile media usage (mobile phone, PDA, etc.), and its purpose is management of customer relationship, as well as encouraging users to establish a mutual dialog with a company via mobile media.

Sinisalo et al. [23] have made a list of key issues recognized in the process of mCRM creation in the concrete case of implementing mCRM system in one of the biggest Finnish companies in the course of 2004 and 2005 (Figure 4). Key issues have been divided into two main groups: technological and marketing issues.

Five key issues have been identified concerning technology:

1. **server** – company must have a server that can manage (send, receive and store) an unlimited number of SMS and MMS messages. Main concern here is whether it should build its own server or rent it from some other company providing hosting services for mobile marketing.
2. **number** – company must decide how to acquire number of service center for SMS messages (number to which user SMS messages are arriving and from which SMS messages are rerouted from mobile phones to mCRM server).

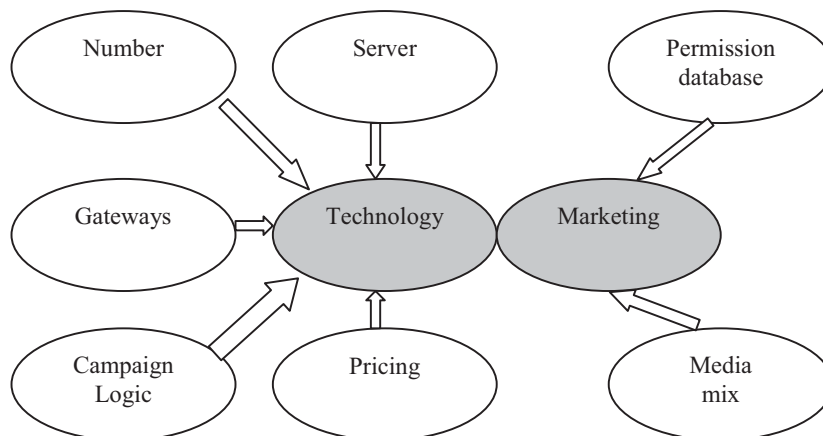


Figure 4. Key issues in the process of mCRM creation, adapted from Sinisalo et al. [23].

3. **gateway** – communication device connecting two independent systems using different protocols. It depends on a number of mobile operators in the country where mobile marketing campaign is taking place. Presently, there are three mobile operators in Croatia (T-Mobile, Tele2 and Vipnet), and from a point of view of technology this does not represent a major problem or cost, unlike e.g. Finland with 17 active mobile operators, and it is necessary to enable users from all those networks full server access. In principle, operators must provide a connecting service to their network for SMS/MMS messages. This service is often referred to

as messaging interface, and it enables sending SMS and MMS messages between mobile devices of single operators and the information system of a company implementing mCRM: This service basically involves three different connections: connecting content gateway contents, short area code / SMS number and price setting service, and once it is established all mobile subscribers can start their SMS dialogue with a company.

**4. Company logic** – it refers to specifics on which users can ask questions, i.e. give answers during a campaign. Without server having a set up company logic, it would not be possible to receive or save messages from users. In addition, turning data received from users into user information would be almost impossible without company logic. All these logic requirements need to be implemented into server prior to starting a mCRM campaign. E.g. company logic can consist of a key word, age, gender and area of interest. Using a key word, server identifies received messages and assigns it to a specific campaign. Age, gender and area of interest are stored in mCRM, to be used in future for sending personalized messages to users.

**5. Price setting** - there are three different options for setting price of messages in a campaign. The first one involves a usual price of SMS identical to the one on the price list of mobile operators. The second option is a free SMS, meaning that users incur no costs whatsoever. The last option is the price using premium rate, meaning that the price of SMS messages received from users is set using a privileged rate, on which users will be notified via an access message (in agreement with an operator).

When it comes to marketing, its main task is to find a way to attract user attention and encourage them to initiate dialogue with a campaign launching company. Two key issues have been identified on this level:

**1. Combination of media during campaign creation, i.e. how to attract attention of potential users to using mobile media in communication?**

According to Sinisalo et al. [23] combination of various media used in marketing campaigns is the best way for attracting potential user attention in mobile marketing campaigns. In other words, they propose using other media, such as TV, radio, Internet and print media for promoting a campaign that will take place via mobile media. For the very first time the same rules are applied to creation of mCRM campaigns as to other traditional marketing campaigns. Campaign needs to determine a target user group, communication goals, design messages, choose a medium for attracting user attention and collect feedback in order to measure effects produced by a campaign.

**2. A permission database**

It is necessary to carefully reconsider where it would be possible to obtain data on target user group from, and whether we are allowed to send them a message via mobile media in view of legal restrictions. There are basically three different ways of collecting data on potential mobile users: purchasing, renting or developing one's own database. Review of mobile marketing campaign launched so far shows that almost all companies have opted for developing their own databases containing data acquired by means of their marketing campaigns. Principle used with very little variation is as follows: a company asks users to send their personal information, such as mobile phone number, full name, address, interests and, the most important, asks them to agree to receive message as end users, in return for participating in some loyalty program and getting certain benefits. After user is registered in some loyalty program, data are automatically transferred to mCRM system. Campaigns can be considered successful if they manage to get over 50% of users they contacted, while there are some campaigns, such as the campaign of the biggest retail chain in Finland, which organized the car winning lottery for users registering for loyalty program that can reach even 80%.

**6. What should be taken in consideration when using knowledge management tools in customer relation management**

In order to find out some characteristics knowledge management tool should have, a survey was done on 62 students who were subjected to two week mobile advertising campaign.

### Survey

For this research, we used a java application that allows the personal computer to which a mobile device with a number is connected to behave like an SMS server that sends text messages to users (students) who are in the data base. Thus we have avoided all the obstacles that Sinisalo et al. recognized in the creation of a mobile campaign. A convenience sample of 62 IT students was exposed to a two week mobile advertising campaign in which they received 1-4 different text messages per day. A written interview was done after the campaign in order to investigate the factors that could influence success of mobile marketing and show the trends significant for future building of KM and CRM system for MM.

### Findings

Customers expressed wish for control and selection of content received and proposed the system be developed that would enable all customers to access and adjust information on specific interests so that they would only receive the messages with the content most interesting to them. Also indicative is the high level of readiness of customers to spend time on making advertisements more personalized and better adjusted to their real needs and wishes. Messages with more information or discount for bearer of message got a better rating of usefulness for the customer. After the campaign the respondents gave an insignificantly higher grade of usefulness of mobile marketing in their future lives as opposed to the start of the campaign. (3,53 as opposed to 3,58 after the campaign).

In order to describe and define knowledge in mobile marketing, it is necessary to describe various levels of information, from data and information to knowledge as Hansson describes [24]:

- Data are transformed into useful information and useful knowledge, thus increasing value of initially relatively useless data. Data – when it comes to mobile network, this could be, e.g. list of calls established using a mobile cell or a list of currently registered mobile stations,
- Information – data meaningful for a person searching for them, and when such information are processed and presented jointly using, e.g. GIS „Geographic Information System“ it is possible to obtain information on current position of a mobile station,
- Knowledge – it can be defined as an ability to produce action based on information. This is the highest level of information. It can also be used and connected with other information and knowledge in order to produce new knowledge. E.g. information acquired using GIS, together with information from GIS on locations of shops, sales centers and other points of sales could create knowledge essential for marketing, i.e. mobile marketing.

Knowledge management could collect knowledge about market and non-market factors [25]. Also, referring to knowledge needed for mobile marketing, knowledge management tool may be used on analysis of mobile operator users and data in order to select combination of media that will be used in mobile marketing campaign. Many users communicate with SMS, some with MMS others through WAP or are surfing the Web through a mobile device. All this knowledge is explicit and could be gained through data analysis of mobile operator as is described in section 5 of this paper. Second possibility is to use data from mobile cell to get knowledge of current position of a user. This kind of knowledge can be used to attract user attention in mobile campaigns.

Latest possibility, from a social networking point of view, is to connect social network and mobile network through knowledge management. Social networks are a new trend and are often accessed via mobile device so they are becoming a new media for an access to users [26]. Social network marketing is a new growing area [27] in marketing and mobile marketing should take its piece of pie.

Nokia, the biggest mobile device manufacturer, has launched Ovi, media sharing website that allows users to share media, calendar and to-dos and has same principles like social network. With Ovi, Nokia raises awareness of their products and services. Knowledge management tool must have a possibility to sort out users in mobile network that are using or



are involved in some kind of social network. Membership in social network can generate new knowledge about users and their point of interest.

## 7. Conclusion

There is no doubt that knowledge management, as a new and rediscovered area, has only at present day managed to provide various benefits, thanks to having at its disposal adequately developed tools and opportunity to merge various types of knowledge. Apart from marketing benefits, knowledge management can offer various benefits for other areas, i.e. parts of organization, as well. Knowledge management can be used to decrease potential loss of competitive edge caused by employees leaving the company. On the other hand, characteristics of a tool to be used ask for employees who know how to use the tool and how to find information within the knowledge database and not for them to actually possess the knowledge necessary for solving a problem.

Fear from knowledge management and existing obstacles will be torn down thanks to desire for maintaining competitive edge in the market race. This vision of future could scare some people not accustomed to knowledge sharing, because knowledge sharing for them can signify "losing power". However, benefits from this policy are so numerous and strong that desire for maintaining competitive edge will force all mobile operators to enter the arena of knowledge management, and try to become leading in their area. Unfortunately, there can only be one leader that the others can follow and participate in sharing the „remains“.

There are various problems that can arise during the process of establishing knowledge management system to be used in a company with purpose of distributing knowledge to all company employees. This also includes marketing. It is absolutely necessary to have a well-defined strategy, goals and to conduct knowledge reviews. High quality planning is going to facilitate implementation of knowledge management. The plan itself and initiatives for knowledge management will have to include requirements for knowledge in marketing, and mobile marketing, as well.

Mobile operators are in a best position to collect the biggest portion of knowledge using knowledge management and use to fill CRM databases. Although such knowledge is very valuable, it is also most susceptible to changes and of highly technical nature, and at the same time it is essential for gaining a competitive edge on a market. Operator can offer such knowledge to vendors that can again use it in their marketing campaigns, which also include mobile marketing.

Mobile marketing as a subset of marketing function raises not only a lot of issues, but also opens up new ways for approaching customers. Researches already conducted in this field have shown that organizations that have started including mobile marketing in their strategies are more successful on the market. Knowledge management as a provider of knowledge to be used in marketing is definitely a facilitating factor, which is why organizations that have extensively employed, i.e. used knowledge management are considered to be more innovative and ready to adopt changes.

Market changes, introduction of new channels and 'strengthening' of mobile marketing has probably not surprised them, since they were already ready for it. Companies that do not employ knowledge management, and that do need knowledge for marketing purposes, are recommended to use some of existing solution and follow the „path“ of major companies that have already successfully implemented knowledge management policy. Knowledge management for mobile marketing shall further strengthen focus on customers, knowledge about their needs and ways for meeting those needs.

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