

From Mass to Personalized Mobile Marketing Strategies: The New Dimensions Through Expert Systems

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Abstract

Today, mass mobile marketing and advertising are beginning to lose their positions and personalized (individualized) mobile marketing has started to dominate as a new way of marketing strategy, because expert systems, as a subsection of artificial intelligence, are able to help sending personalized messages to thousands of customers taking into their differences in a very short time. Expert systems provide marketers to serve customers efficiently and individually, and integrate customer characteristics, locations, data and rules to send personalized messages like a marketer. With expert system-based personalized mobile marketing, mobile phone users will receive personal and location specific mobile marketing messages with great benefits. Providing personalized information to marketers with expert systems will send more appropriate messages, create better customer satisfaction and increase mobile marketing efficiency by targeting the right consumers. Therefore, personalized mobile marketing has the potential of becoming a major mechanism in the future of mobile marketing. The objectives of this study are to draw marketers and entrepreneurs' attention to expert system-based personalized mobile marketing and develop a draft expert system to send personalized mobile marketing messages to targeted customers. At the end of this study, some recommendations to expert system developers and a draft expert system-based personalized mobile marketing application are given.

Keywords: Mobile Marketing, Expert Systems, Innovation

Introduction

Advances in mobile communication technologies, mobile phones and mobile applications in recent years have made a revolution in many areas, have emotional impacts towards everything from lifestyle to business, and present some opportunities for retailers and customers. Besides these positive effects, there are also some negative consequences like disturbing consumers when marketers use mass mobile marketing and sending offers to all customers in hand. Nowadays, personalized marketing approaches like sending offers for specific customers by using personal information are becoming more important than mass marketing concept, and the efficiency of sending personalized mobile marketing messages is increasing.

As in many countries like Turkey, mobile marketing and advertising (SMS, MMS and In-Apps) is subject to regulation, which mobile phone users can control after mobile marketing messages can be sent. Effectiveness of mass mobile marketing is diminishing because mobile phone users able to block mobile marketing messages that are not relevant to them. Instead of sending marketing messages to every customer, who have mobile phones and devices, marketers can send personalized marketing messages to targeted customer. The reasons for the growth of personalization are to attract the attention of customers and increase marketing effectiveness. In order to send effective personalized mobile messages, expert systems can serve as a tool to choose the right customer at the right time, and allocate advertising resources more efficiently. In expert system application, customers' information may be extracted from their mobile phone signals, demographic characteristics and previous purchases etc. Expert systems use knowledge saved by a computer to make a decision that entail human expertise. In the personalized mobile marketing program, this system decide which mobile sales proposals will be sent to, when, where, and for which products and services using the saved knowledge.

This study consists of two main parts. In the conceptual framework, the concepts of mobile revolution, mobile marketing, mobile marketing problems, challenges, solutions and paradigm shift from mass to personalized mobile marketing are explained. In the research part, developing an expert system model for personalized mobile marketing and advertising are proposed.

Conceptual Framework

Mobile Revolution, Marketing and Advertising Concepts, Problems and Challenges

The mobile revolution has begun changing our daily lives and businesses for the last two decades. The impact of this revolution can be seen in the fact that people use mobile phones intensively to meet their daily

needs and that companies can reach their target markets with mobile marketing tools more effectively, because mobile communications and mobile phones offer new commercial channels and significantly influence the way in which companies direct their marketing and business activities (Barutçu, 2007). Mobile communication provides an innovative marketing and advertising channel including SMS, MMS, Bluetooth, Mobile Apps for transferring marketing messages and persuading customers via mobile networks, phones and other devices (Barutçu and Göl 2009; Sinkovics et al., 2012). Any company or retailers can send messages through SMS, MMS or Mobile Apps to their prospective customers, users with minimal effort, time, and cost in the hope that customers might respond to the intended meaning of the messages (Shareef et al., 2017).

There are some benefits of mobile marketing to marketers including interactivity, personalization, and reaching large target customers in right place and on time with lower marketing cost. Moreover, one of their dreams and demands are to communicate and reach prospective customers and to contact them everywhere and every time. Mobile marketing via mobile devices is a very important tool for all marketers because mobile marketing opportunities are not available in any devices, mobile phones make revolutionary contribution towards objectives and benefits of marketing, and finally mobile marketing has turned the marketers' dreams into reality (Jayawardhena et al., 2009; Barutçu, 2007; Facchetti et al., 2005; Anckar and D'Incau, 2002). However, the results of some studies indicated that costumers were annoyed if marketers prefer mass mobile marketing and sent mobile sales offers in an inappropriate way to many customers. For example, even though Tsang et al., (2004) claimed that mobile advertising would be the future trend, they signified that consumers' attitudes toward advertising in general and mobile advertising in specific were negative, and because they found that receiving mobile advertising without permission was irritating, given the personal, intimate nature of mobile phones. Chen and Hsieh (2012) indicated that mobile advertising can be bothering and annoying to mobile phone users, because mobile phones are personal appliances. Varnalı and Toker (2010) found that if mobile advertising was permission-based, highly targeted, highly relevant, striking, personalized, and has value-added content, consumers' perceptions, beliefs and attitudes were positive. Liao et al., (2005) pointed that providing personalized mobile marketing can increase customer satisfaction and business earnings, which are vital to the success of mobile marketing, and added that if the message content was designed in such a way that could be compatible with consumers' personal needs and requirements, consumers felt a perceived value and usefulness. Consequently, there is a fair possibility that customers will not like mass

mobile marketing campaign, if mobile marketers disregard personal needs and expectations.

From Mass to Personalized Mobile Marketing Paradigm

Marketing continues to evolve from mass to personalization. With personalized mobile marketing, not only personal marketing communication but also personalized product design, price and distribution strategies can be developed. Personalization is very important in various media environments and mobile marketing as well due to its effects of mobile users' purchasing behavior and effectiveness. Personalized mobile marketing can be defined as developing marketing mix, which are designed for a specific customer or a group by using personal information about the customers themselves via mobile phones and mobile communication systems. There are many advantages of the personalized mobile marketing and advertising relative to traditional mass marketing. Some researchers specified that the response rates of personalized advertising contained a favorable product recommendation that are largely higher than the response rates of non-personalized advertising. Thus, the consumers' demographics, preferences, context and advertising contents are important for personalized mobile advertisings, because they would influence the degree of customer approvals of mobile marketing messages and sales proposals (Howard and Roger, 2004; Xu et al., 2008).

The success of mobile marketing and commerce mostly adhere to whether personalization can be used to send personalized messages to customers, because providing personalized mobile messages and information to customers will boost the demand for mobile services and customer satisfaction from mobile marketing activities as well (Xu et al., 2008). The most common forms of mass mobile messages including SMS, MMS and In-App advertising are sent to all potential customers by the companies. Mass advertising messages sustain to create brand images in consumers' consciousness, however, personalized advertising messages integrate into people's life, support to consumers' lives and proactively add value to marketers' activities (Chen and Hsieh, 2012). Personal needs, time, location sensitive communication with potential customers has likely to have value for drawing customers' attention. Since customers often read messages selectively, the reputation of the message sender is extremely important in persuading consumers to view and read the message. Thus, marketers should differentiate among customers according to their characteristics and send personalized messages accordingly (Shareef et al., 2017).

In order to send personalized messages and enable personalization in mobile marketing, Xu et al., (2008) combined systems and behaviors to send personalized mobile messages and developed an application to send sales

promotion to mobile phones based on users' preferences, content and content information for restaurants (like food style, cuisine, restaurant ambience, restaurant service, price, discount, restaurant etc.) with the prior probabilities and Bayesian Network structure variables. According to their assessment of the system results, sending personalized messages improved and increased customers' positive attitudes and effectiveness of mobile advertising. In this point, expert system can be used to avoid possible negative effects of mass mobile marketing and send personalized messages more efficiently.

Expert Systems and Permission Marketing for Personalized Mobile Marketing

Developing effective mobile marketing strategies entails classifying and concentrating on the correctly targeted customers, because mobile marketing programs have fixed and variable costs. Thus, it is important to determine prospective customers' demographic characteristics holding more positive attitudes towards mobile marketing tools, and send personalized messages so as to decrease marketing costs and increase efficiency, rather than implementing mass mobile marketing programs (Barutçu, 2007).

In order to send personalized messages and apply personalized mobile marketing, expert systems can provide that mobile marketing and advertising messages are accurately send and used. Expert systems can be defined as a subdivision of artificial intelligence containing that expertise, which is the vast body of task-specific knowledge, is transferred from a person to a computer. This knowledge is then stored and users call for the computer for particular assistance as required (Liao, 2005).

Expert systems are one of the main research domains of artificial intelligence. The most important feature that distinguishes artificial intelligence from expert systems is the computer program that reaches the solution by thinking like an artificial intelligence person and solve the problem while expert systems acts as an expert. There are some sub groups of expert systems like artificial neural networks, fuzzy expert systems and genetic algorithms. Although there are some advantages and disadvantages of expert systems, nowadays they are applied successfully in many areas. In sum up, expert systems have made personalized mobile marketing possible and more efficient, giving marketers a computer program to send personalized promotions and sales proposal messages.

The most important factor of an expert system is a structure that can collect personal data, process it and make a decision according to certain criteria. In order to get more personal data, trust plays an important role in permission-based mobile marketing and mobile marketers should focus on building a strong and confident image in order to acquire consumers' permission for mobile messages (Kautonen et al., 2007). According to

permission marketing concepts, consumers were encouraged to join in long-term, interactive marketing activities in which they are awarded a prize in some way for attracting their attention to progressively appropriate messages with respecting their privacy (Godin, 1999). Kavassalis et al., (2003) indicated that mobile phones are the personal devices and used in permission-based marketing, given their authorization to permit the marketers to get proper personal information as the appropriate context for mobile marketing, and Jayawardhena et al., (2009) defined the four antecedents (institutional trust, personal trust, experience and perceived control) in the likelihood of customers giving their permission to marketers to send mobile messages. Therefore, mobile marketers need their customers' permission to use their personal information in expert systems they develop.

Expert Systems Development Processes

Expert systems are computer systems designed to replicate functions performed by human experts. As seen in Figure 1, expert systems have essentially composed of two sub systems: the inference engine and the knowledge-base. Inference engine contains the reasoning capability, which interacts with the knowledge-base. The knowledge-base contains information about how to solve problems within the problem domain in question. Knowledge-base may contain thousands of rules describing the thought process that a particular human expert uses in solving the problem in question. The user provides information about a specific problem and the inference engine uses its knowledge and some external routines to come to a conclusion, give some advice or achieve a goal.

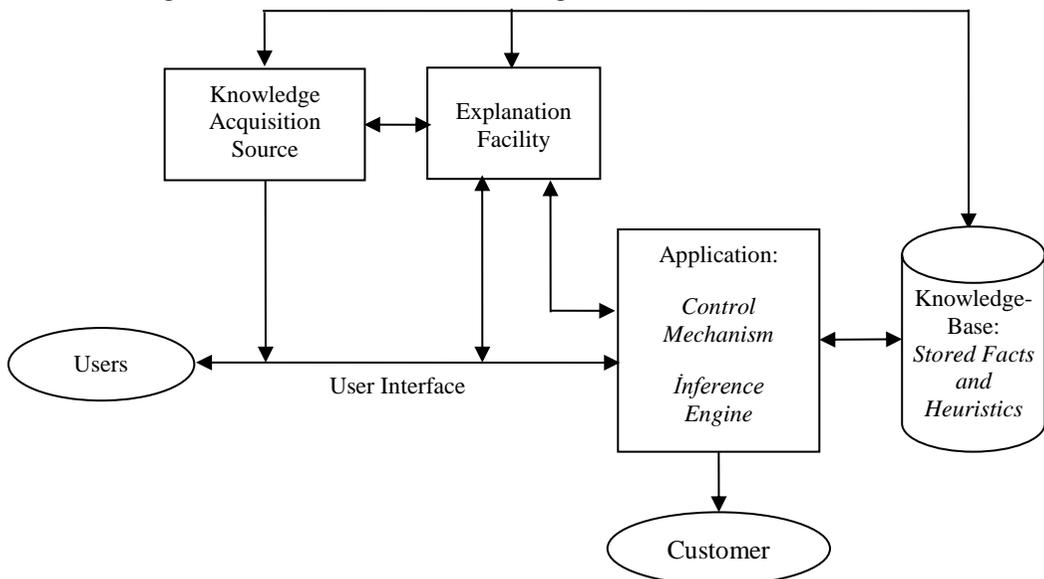


Figure 1. A general structure of the personalized mobile marketing proposal expert

Development of expert systems is based on situation requirement analyses, and the steps involved are (1) situation selection and definition, (2) situation knowledge analyses and representation, (3) situation knowledge transformation, (4) system design, (5) system development, (6) system testing and implementation, and (7) system maintenance. The steps are situationally based because the system under development must replicate the specific expertise under question. This requires not only accurate analyses of the situation requirements, but constant referral to them during the system development process.

Developing Expert System for Mobile Marketing Efficiency

As seen in the conceptual framework of this study, the main problems of mass mobile marketing strategy are sending mobile marketing messages to unrelated customers and deciding which customers are more appropriate to send messages take up too much of mobile marketers' time. The main solution of this problem is to set up an expert system to make decisions which messages to send to which customers and send personalized mobile marketing messages according to the information of thousands of customers in the company and GSM operators' database. Therefore, the main objective of this analysis is give some clues to develop a draft, not fully developed, expert systems to send personalized mobile marketing proposals and messages using special target consumers' information extracted from mobile signals, demographic characteristics etc.

The proposed expert systems will determine and decide which customers are more appropriate to send messages according to the criteria set. The criteria required for the expert systems are obtained through literature review (Phelps et al., 2000; Unni and Harmon, 2007; Chen and Hsieh, 2012). Effective personalized mobile marketing with expert systems requires the customer's personal data including mobile phone number, demographic characteristics, purchasing history and location information etc. Using location information cautiously and protecting the privacy of mobile phone users are very important for marketers, because mobile phone users are sensitive of gathering and using their personal information (Phelps et al., 2000; Unni and Harmon, 2007). Moreover, Fuzzy Delphi process used to define the crucial attributes in a personalized mobile message for different products, and six important design attributes for personalized marketing messages: price, promotion, brand, interest, preference, and type of mobile phone were recognized (Chen and Hsieh, 2012).

In order to send personalized messages with expert systems, demographic characteristics of the customers (age, gender, education levels, income status, marital status, etc.), location and purchasing history etc. are

required to reach a decision. The system users define many rules and criteria which customers are more appropriate to receive marketing messages and the characteristic of customers to send a mobile marketing messages. After these definitions, expert systems can decide to send targeted mobile messages only to the customers who are more appropriate in terms of their demographic characteristics and have revealed previous interest, needs and wants.

Conclusion

It is important that mobile marketers understand when their messages can work and shift more of their attention to personalized mobile marketing and advertising. Mobile marketing campaign should be more personalized, and personalization of mobile messages can increase their positive attitudes and enhance customer ability to remember the messages, brand names and companies, and raise possibility to accept personalized mobile marketing proposal.

Mobile marketing will be more successful when marketers take into consideration of personal needs, send more valued and appropriate messages and apply personalized mobile marketing strategies. Moreover, mobile marketing will be more effective when targeted customers are close to a purchase decision and have high involvement, and they will have a more positive impact on the personalized mobile marketing proposals about the products and services they are planning to buy and receive sales' offers that exactly meet their needs. In this stage, expert systems will help choosing the appropriate customers based on their personal information, demographic characteristics, locations and previous purchase history. Marketers may use expert systems to design personalized mobile marketing programs that build more positive attitudes with personalization and avoid possible negative effects of mass mobile marketing. Moreover, marketers should use permission based mobile marketing strategy, develop some promotional marketing policy in order to encourage to share their personal information, and design expert system to send personalized messages. Besides building own customer database, marketers can also take advantage of GSM operators' database to determine correct existing or potential customers to send mobile advertising, and deliver personalized marketing messages based on a customers' information and digital footprint generating through expert systems.

The major characteristics that distinguish the proposed expert system-based application from conventional systems are that the proposed expert system-based application contain knowledge-base about a specific consumer domain, which is in large measure distinct from the mechanism used to manipulate the knowledge to reach a decision on consumer groups. In further

studies, a fully-working rule-based expert system can be developed and tested. Consumers' reaction may also be measured through this system.

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