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THE ICT AND DATABASE MARKETING: SYNERGY EFFECTS FOR BUSINESS SUCCESS

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Abstract: *Companies owning consumer databases provide successful performance on the market whose effects are measured by achievements of objectives of sales and profit. Collection and use of consumer data enable better determination of the target markets and understanding of consumer behavior. Field of computerized segmentation and defining target markets is extremely sophisticated and essential for Direct Marketing so that those who apply it consider it as a new marketing, namely Database Marketing. The modern definition of Database Marketing indicates that it is a form of Direct Marketing using databases of both current and potential customers applying new and advanced approaches. In other words, today's technology advancements enable efficient use of the database to collect, consolidate, analyze, understand and manage customer data in order to deliver relevant and personalized marketing messages to the right place at the right time. The Internet is a great medium for the further development of Database Marketing that through the creation of an electronic database facilitates the monitoring of companies' promotional effects. Therefore, this paper analyzes the influence of novel Information and Communication Technologies (ICTs) to the development of Database Marketing as well as Database Marketingsignificance and influence to business success.*

Keywords: *ICT, Database Marketing, Business Success;*

INTRODUCTION

The recent Information and Communication Technology (ICT) advancements, and the appearance of the Internet of Things (IoT) particularly, have completely revolutionized almost all facets of our lives resulting in prodigious amounts of data being gathered, analyzed and used on a daily basis.

Cisco predicts that 50 billion of smart devices will be connected to the Internet by 2020, while the data generated by IoT will reach 600 ZB per year by the same year [1]. Theincreasing amount of diverse types of data streaming from numerous devices/things must be analyzed in order to obtain valuable insights, make certain predictions and perform decision-making actions.

Various Big data analytic techniques, such as artificial intelligence, machine learning, intelligent data mining, computer vision, real-time analytics, etc. are being implemented to generate new insights, to solve a problem faster, implement recommendation engines and consequently

improve lives. Big data, alongside numerous applications, are widely used in marketing, recruiting and sales departments of companies. The first and most significant step is data aggregation.

The gathered data should be both relevant and high-quality (accurate, reliable and valid)[2]. After data collection and its saving in databases, they are being analyzed in order todiscover hidden patterns and anomaly detection, and consequently, realize predictive modeling and make actionable decisions.

A systematic approach to the consumer data maintenance (data collecting, consolidation, and processing) in the company's databases is known as Database Marketing (Fig. 1) [3].

Figure 1. The three principal stages of Database Marketing

Technology advancements have significantly contributed to the more sophisticated styles of collecting, processing and using consumer data (both for clients and potential customers) that can provide lots of useful insights.

The obtained valuable insights enable companies to achieve their objectives such as [4, 5]:

- build and increase customer loyalty,
- improve existing and create new business applications,
- unlock hidden avenues for profitability and increase competitive advantage.

It is evident that only ICT and Database Marketing symbiotic approach hold the potential to significantly improve the delivering relevant and personalized marketing messages to the right place at the right time. Therefore, this paper attempts to summarize the role and benefits of technology advancements in the development of Database Marketing as well as Database Marketing influence to business success. Hence, the paper is structured as follows. The Section 1 is devoted to the Database Marketing concept and shows the influence of recent technology advancements indata aggregation, processing and utilization and creating databases that contain consumer information. The essential Database Marketing techniques are stated as well. Database Marketing influence on business nowadays is discussed in Section 2. The last section contains concluding remarks.

1. THE CONCEPT OF DATABASE MARKETING

Even the Database Marketing invention dates back to the late 70s, its implementation didn't happen until late 80s when major American corporations began to use actively Database Marketing.The technology progress, decreased costs of computer storage and retrieval have enabled the utilization of customer database to enhance marketing productivity[6].

Database Marketing helps marketing managers to consistently gather and analyze publicly available information in order to determine and enhance a company's marketing strategy [7].

The development of marketing intelligence is aimed at improved recognition of the customers' needs, customer service improvements and personalization of offers to their requirements and expectations, increased awareness to companies' operations opportunities and threats alongside more efficient cost management and regular monitoring of market trends[8].

In other words, the marketers must have the access to customers' data in order to define target markets, compare customers' value to the company and provide more specialized offerings for customers (Fig. 2)[3, 9].

The data is being stored in databases which consist of customers' names, addresses, phone numbers and e-mails, their requests and any other data that can be legally and accurately collected [6].

However, not all information in a database is publicly available [18].

Figure 2. Significance of data for performance improvement [9]

As databases construction and adjustment are crucial in marketing actions, it is of key importance to analyze the technology influence to the creation of databases, data analysis, and marketing decision-making.

1.1 The ICT impact on Database Marketing

With the technology advancements, the collection of data, its processing, and utilization have never been easier. The Internet has been proven as a very suitable medium for the data gathering, information dissemination and application of knowledge. The appearance of the IoT has extended the ability to collect, process and transmit data to other devices/things, alongside standard devices such as computers, tablets or mobile phones. The emergence of large amounts of sensors and IoT-based smart devices, as well as the growth of Cloud/Fog/Edge computing, have resulted in massive volumes of data than ever before. Thanks to the Internet, mobile technology, and IoT, people, places, organizations and objects are linked nowadays in unprecedented ways. Since the Database Marketing relies on data, the more relevant and high-quality data available implies the customers' experience and more effective business decisions and processes [5, 10]. We are witnessing massive volumes of data collected on a daily basis from a number of sources. Data regarding actual and potential customers, transactional, promotional and information on the product, as well as demographic data, are typical information stored in a database [11].

The IoT results in numerous challenges regarding database management systems, such as incorporating large volumes of data in real-time and their processing almost immediately. There are certain requirements regarding IoT databases, such as: scalability, ability to ingest data at sufficient rates, flexibility, fault tolerant, high availability, integration with analytics tools and costs [12].The IoT inclusion enables smarter insights through the use of additional data from smart devices. The additional benefit of IoT is smart messaging or the realization of the new omnichannel world for consumer engagement [13]. However, the storing large amount of high-velocity and high-variety of consumers' data in the databases doesn't do much. The gathered data must be processed in appropriate manners so that the marketers may learn more about the customers and make decisions and actions towards the achieving higher companies' performances. The rapid progress in technology enabled the utilization of various Big data analytic techniques that contributes to getting valuable insights in easier and faster manners. The improvements in Big data analytic tools and computer algorithm and capacity enable faster discovering hidden patterns and problem-solving, knowledge obtaining and automatic recommendation system generation what significantly contributes to company cost savings (Fig. 3) [5, 14].

Figure 3. Big data analytics in marketing [14]

In other words, automated customers' data collection and analysis enable improved knowledge of customers' profiles, conducting to the realization of best-fitting predictive techniques for ad serving and sales/promotion tactics through online or offline marketing campaigns (Fig. 4) [15].Therefore, the latest technologies' utilization delivers far more targeted and profitable campaigns [16].

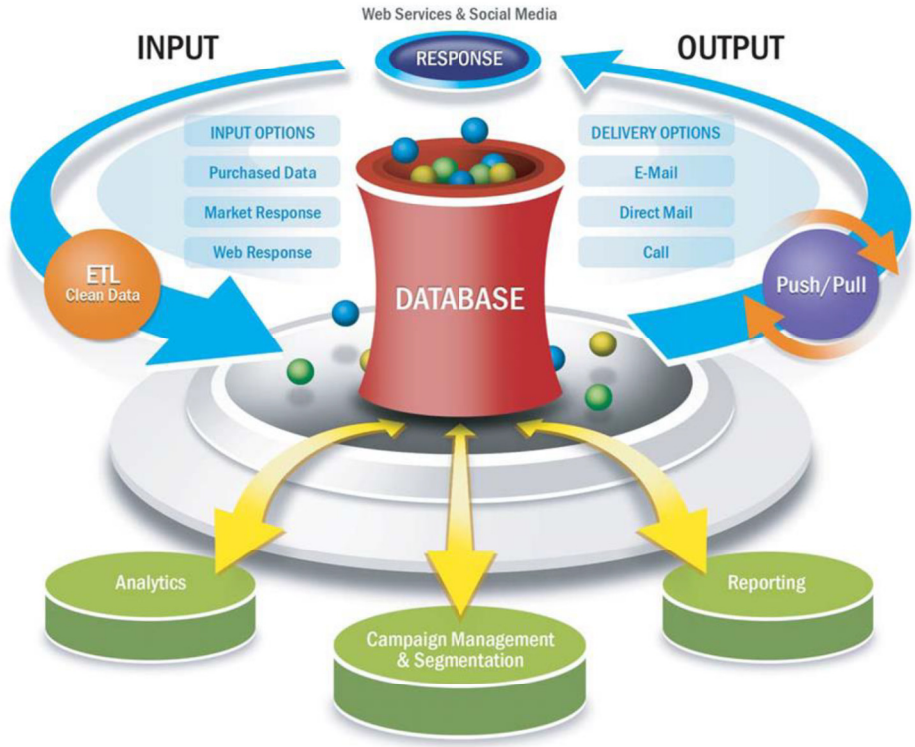

Figure4. The marketing database development [15]

1.2 Database Marketing techniques

Evidently, a well constructed and maintained customer database is the essence for a comprehensive marketing strategy [17].According to theliterature [18-20], there are a variety of essential Database Marketing techniques for improving marketing efforts, increasing sales and retaining and getting more customers:

1. CLV or Customer Lifetime Value is quite powerful and widely used technique that can be calculated in any industry, business to business or business to consumer.
2. RFM (Recency, Frequency, Monetary Analysis) is a highly successful way of predicting which customers will respond to promotions, and hence helps creating a focused marketing campaign without wasting time and money and achieving great conversion rates by using the 80/20 rule (80% of revenue comes from 20% of customers).
3. Customer Communication is a helpful technique for companies that have a diverse customer base and contributes to the increasing customer retention, loyalty, cross sales, up sales and referrals.
4. E-mail is a powerful Database Marketing tool that enables better communication with the customer.
5. Appended Data techniques can be employed to organize the customer' information more efficiently, what enables the world of predictive models and provides better services to the customer.
6. Predictive Models based on appended data and combined with Customer Communication are very powerful technique that can improve marketing efforts, increase response and reduce customer attrition rate.
7. Relational Databases enable storing an unlimited sum of information about any customer or prospect, and retrieve it in an instant and in a numerous different ways, what makes them essential to advanced Database Marketing. NoSQL databases, especially key-value, document and column family databases, easily accommodate different data types and structures without the need for predefined, fixed schemas, what makes them good alternatives when an organization has multiple data types and those data types will likely change over time [12].
8. Web Access to the database enable access online over the web by anyone in the company from any location.
9. Websites, as the manners of presenting the product, maps, instructions, background information and details are necessary in a new digital world.

10. Customer Segmentation means dividing customers usually based on demographics and behavior and developing customer marketing strategies for each segment.
11. Treating customers differently means the development of programs designed to retain the Gold customers – a low percentage that provides 80% of revenue and earnings, and encouraging others to go upwards to higher status levels by offering special benefits, rewards, and services.
12. Loyalty Programs are based on the customers' need determination. Offering loyalty programs is the best way to guarantee sales and beat the competition.
13. Analytical Software enables customers' data analysis, achieving valuable insights and making predictions.
14. Penetration Analysis using a database and online analytical software, can help to resolve a possible problem and increase sales in certain segments (e.g., to locate retail stores, place advertising, and direct sales force).
15. Multi-channel marketing is the essence of Database Marketing since nowadays customers buy through multiple channels: retail, catalog, and web.
16. Rented Lists mean the sharing, exchanging or renting customer lists on the market.
17. Profitability Analysis enables the measurement of profitability of each customer and helps with discovering unprofitable customers, finding out what profitable customers want and how much they are willing to pay for it and increasing profits.

Evidently, the essence of the Database Marketing lies in forming a rich and organized database, with useful prospects and customers'data available. The rapid ICT advancements enablefaster and easier data collection than ever before creating the marketing database in an online, 24/7, relational database environment, while the appliance of novel Big data analytics techniques, enable uncovering hidden patterns, correlations and obtaining other valuable insights almost immediately. Established on the accurate and up-to-date data, the aforementioned powerful Database Marketing techniques enable more accurate targeting customer or segments, increase the value of a customer, retain and acquire more customers and lastly increase sales and profit [19]. The incorrect or not up-to-date data may erode customer loyalty, waste money or to miss valuable opportunities[21].

2. THE DATABASE MARKETING INFLUENCE ON BUSINESS

Database Marketing can be seen as a symbiosis of collection, accumulation, processing and analysis data on consumers, competition and operational area. Evidently, the development of technology, the rise in its accessibility, databases growth and software sophistications have significantly contributed to the involvement of Database Marketing, changing the marketing world faster than ever before.

In order to improve business and profits, there is a demand to perform next few basic steps in Database Marketing [22]:

1. Customer data collection that includes relevant and accurate data gathering, storing and updating it in a database, and making it available to marketers and other company staff (management, sales, customer service, marketing, market research, etc.).
2. Extraction of useful knowledge from data using data analysis and developing adequate customer and prospect segmentation schemes, modeling, scoring, and profiling.
3. Utilization of knowledge obtained to develop strategies and tactics for behavior modifications (e.g. reallocation of resources, communications, loyalty programs, customer specific pricing, etc.).
4. Integration of Customer Profitability with the database enables the development of targeted marketing strategies and varying service levels established on customer value.

Performing above mentioned steps in the Database Marketing enable companies to [8]:

1. Understand customers need, requirements and expectations based on the gathered up-to-date and current information on the customer.
2. Perform the customer segmentation and focus on the most valuable customers.
3. Reduce the costs of promotional efforts.
4. Increase the customers' loyalty.
5. Improve the customer service.
6. Conform to the market trends and respond to them with relevant actions (e.g. creation of new product or modification of existing, introduction of an additional service, etc.).

Alongside present Database Marketing benefits, it is expected that Database Marketing in future will be used in market segmentation.Database marketing will be used is in making decision of product differentiation and price discrimination. In the future database marketing will continue to play

its strategic roles in helping marketers to customize their products and enable them to receive almost online feedback about for example any product promotion or change in channel effectiveness. Database marketing will be strategically used in determining what products to make available to consumers and will be very effective determinant of integrated interactive marketing campaigns. [7].

CONCLUDING REMARKS

Database Marketing, as a form of direct marketing that uses databases, allows companies to use business intelligence in order to realize more personalized communication with customers. Since Data Marketing, as well as business success, depends on data, collection, processing, and transmission of customers' data are of key interest. The technology progress has enabled faster, easier and most effective ways for data management, implying that the ICTs and Database Marketing only together can move business much more quickly, smoothly, and efficiently. Hence, the ICT and Database Marketing symbiotic approach enable cheaper, faster, easier and better problem solving and predictive modeling than the traditional methods, and moves the business success graph in the upward direction.

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