ANNALS OF THE UNIVERSITY OF ORADEA
Fascicle of Management and Technological Engineering
ISSUE #2, August 2017, http://www.imtuoradea.ro/auo.fmte/

THE USE OF DATABASES IN MARKETING

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Abstract – The objective of this paper is to identify a management solution for information in small and medium enterprises. At present, databases are the foundation of marketing activities that take place within a company. Contacting customers, as well as undertaking any marketing activity through databases, has become a habit for performing companies. Marketing activities that are looking to be effective require a growing amount of information that can no longer be managed within traditional marketing information systems, requiring automation of marketing systems. In the first part of the paper are presented the theoretical concepts regarding the databases used in the marketing activity, the second part of the paper presents an example of a database used in marketing activity, aimed at small and medium-sized enterprises. The last part of the paper are presented the advantages of using the databases in the marketing activity.

Keywords — Databases, customers, small and medium-sized enterprises, marketing.

I. INTRODUCTION

ALTHOUGH globally there is a period of impressive development of IT applications related to databases, there are unfortunately many SMEs still holding database marketing as tables and lists of customers, products, prices, suppliers, etc.

A database marketing (in French "base de données marketing") is a collection of marketing data organized, coherent, structured and accessible to multiple users, in an interactive way, by G. Orzan [1].

The complex management and processing of information in databases is achieved with the Database Management Systems (DBMS), which represent the software components of the database systems. Of the commonly used database management systems we can mention: ORACLE, MySQL, SQL Server, Microsoft ACCESS, etc.

The main advantage of marketing databases is that these can store large amounts of information that can be accessed by users when they need it. In addition to tables containing lists of customers, offers, etc., the marketing databases can be interrogated, meaning that only certain information requested by an end user can be selected, by P. Kotler, C. D. Jain and M. Suvit [2].

The establishment of a marketing database system requires time and significant financial resources but once implemented, it generates a significant increase in the efficiency of marketing activities and an increase in customer loyalty.

The most important component of a marketing database system is the customer database. Such a database may contain, in relation to each client, information on: demographic and psychographic feature, means of information used, purchasing history, etc.

A classical system of database marketing includes, in addition to component related to customer, databases on suppliers, products, prices, sales force, competitors, distributors, etc.

The most access facilities to marketing databases are offered by Relational Database Management Systems (RDBMS), which allows the integration of all marketing information into a single database, regardless of the nature of the data used.

In the first part of the paper are presented the theoretical concepts regarding the databases used in the marketing activity. In the second part of the paper is presented an example of a database used in marketing activity, designed for small and medium-sized businesses. The last part of the paper will present the advantages of using the databases in the marketing activity.

II. DATABASES IN MARKETING

Information stored in a marketing database is used by marketing managers to support decision-making to meet objectives such as: launching a new product or service on the market; selling a product or service; actions for improvement the client fidelity; increasing market share; attracting competitors, etc.

Distributed marketing database systems ensure the integration of databases into a computer network, consisting of a server and workstations. A distributed marketing database system allows simultaneous access to information from multiple workstations of a computer network. Distributed marketing database systems are specific to INTRANET networks, established within companies or between a company and its geographically distributed subsidiaries.

Basically, a distributed database marketing system can be presented as in Fig. 1.

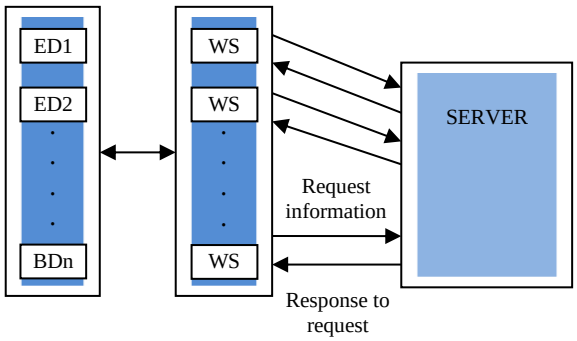


Fig. 1. Distributed marketing database system model, R. Nistor [3]

Marketing information from the internal and external environment (supplies, orders, sales, receipts, payments, customers, suppliers, distributors, competitors, offers, etc.) are organized in marketing databases.

III. Database Model

A standard structure of a marketing database must allow the management of all data relating to: product or service offerings, prices, distribution channels, communication actions (promotion, advertising, public relations, etc.), sales force, supply, sales, competitors' offers, etc.

The main data tables in a standard structure of a marketing database are: customer or service table, pricing table, product table, vendor table, distributor table, sales force management table, main competitors table.

There is currently a tendency to develop marketing information systems by using the databases created through the purchase of information via the Internet. Companies that want to create marketing databases and process them with "networks" have two alternatives:

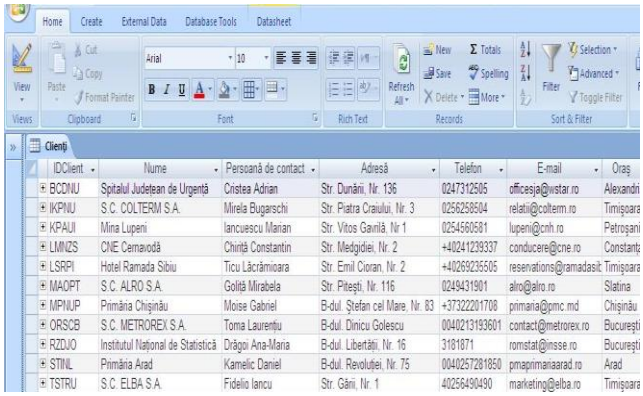
1) *buying from existing suppliers of existing marketing databases;*
2) *creating their own marketing databases using web acquisition strategies, primarily by e-mail addresses (customers, suppliers, distributors, etc.).*

In order to receive information about customers, suppliers, existing products and orders, a database was created in Microsoft Access. The database keeps a list of information about them for the purpose of producing mailing lists and reports.

In creating the database, it started by creating tables. These are the objects in the database that stores the data. The created tables contain information about customers, suppliers, products and orders. To create a table, the information elements have been converted into columns. To determine the columns in a table, it was necessary to decide on the information required for the topic registered in the table.

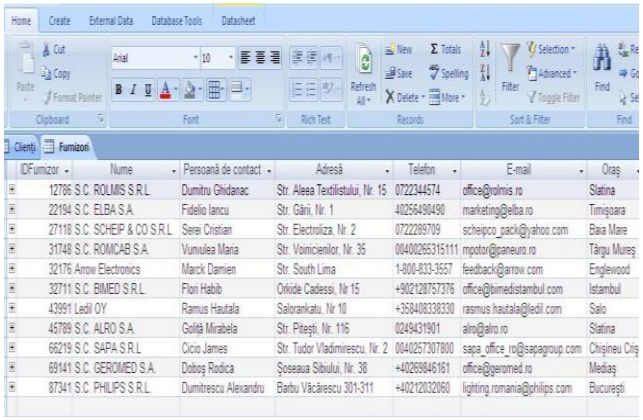
For example, for the Customers table: Customer name, Contact person, Address, Phone, E-mail, City, Country, is a list of columns. Each table entry contains the same set of columns, so the information in these fields can be stored for each record. For example, the address column contains customer addresses. Each record contains the data about a customer.

Each table includes a column that uniquely identifies each row stored in the table. In this case, the following fields are used: IDClient, IDSupplier, IDProducts and IDOrders. In database terminology, these fields are the primary keys to the defined tables.



IDClient	Nume	Persoană de contact	Adresă	Telefon	E-mail	Oraș
BCDNU	Spitalul Județean de Urgență	Cristea Adrian	Str. Dunării, Nr. 136	0247312505	officesja@wstar.ro	Alexandri
IKPNU	S.C. COLTERM S.A.	Mirela Bugarschi	Str. Piatra Craiului, Nr. 3	0256268504	relatii@colterm.ro	Timișoara
KPAUI	Mina Lupeni	Iancuescu Marian	Str. Vitos Gavriă, Nr 1	0254560581	lupeni@cnh.ro	Petroșani
LMNZS	CNE Cernavodă	Chiriță Constantin	Str. Medgidiei, Nr. 2	+40241239337	conducere@cne.ro	Constanț
LSRPI	Hotel Ramada Sibiu	Ticu Lăcrămioara	Str. Emil Cioran, Nr. 2	+40269235505	reservations@ramadasib	Timișoara
MAOPT	S.C. ALRO S.A.	Golită Mirabela	Str. Pitești, Nr. 116	0249431901	alro@alro.ro	Slatina
MPNUP	Primăria Chișinău	Moise Gabriel	B-dul. Ștefan cel Mare, Nr. 83	+37322201708	primaria@pmc.md	Chișinău
ORSCB	S.C. METROREX S.A.	Toma Laurențiu	B-dul. Dinicu Golescu	0040213193601	contact@metrorex.ro	București
RZDJO	Institutul Național de Statistică	Drăgoi Ana-Maria	B-dul. Libertății, Nr. 16	3181871	romstat@insse.ro	București
STINL	Primăria Arad	Kamelic Daniel	B-dul. Revoluției, Nr. 75	0040257281850	pmaprimaarad.ro	Arad
TSTRU	S.C. ELBA S.A.	Fidelio Iancu	Str. Gării, Nr. 1	40256490490	marketing@elba.ro	Timișoara

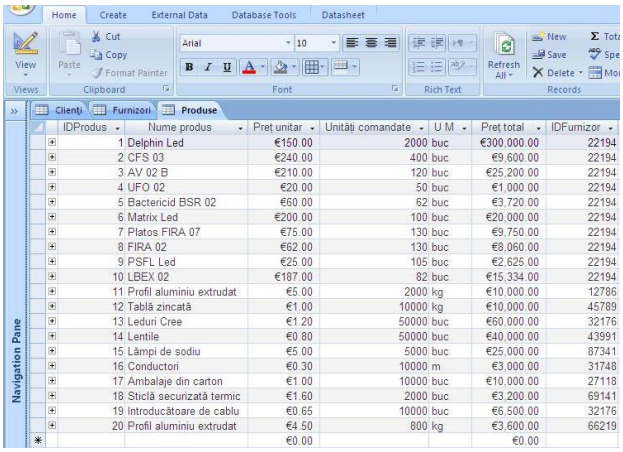
Fig.2. Customers table



IDFurnizor	Nume	Persoană de contact	Adresă	Telefon	E-mail	Oraș
12786	S.C. ROLMIS S.R.L.	Dumitru Ghidanac	Str. Aleea Textilistului, Nr. 15	0722344574	office@rolmis.ro	Slatina
22194	S.C. ELBA S.A.	Fidelio Iancu	Str. Gării, Nr. 1	40256490490	marketing@elba.ro	Timișoara
27118	S.C. SCHEIP & CO S.R.L.	Serei Cristian	Str. Electroliza, Nr. 2	0722289709	scheipco_pack@yahoo.com	Baia Mare
31748	S.C. ROMCAB S.A.	Vumulea Maria	Str. Voinicenilor, Nr. 35	0040265315111	mpotor@paneuro.ro	Târgu Mureș
32176	Arrow Electronics	Marick Damien	Str. South Lima	1-800-833-3557	feedback@arrow.com	Englewood
32711	S.C. BIMED S.R.L.	Flori Habib	Orkide Cadessi, Nr 15	+902128757376	office@bimedistambul.com	Istambul
43991	Ledil OY	Ramus Hautala	Salorankatu, Nr 10	+358408338330	rasmus.hautala@ledil.com	Salo
45789	S.C. ALRO S.A.	Golită Mirabela	Str. Pitești, Nr. 116	0249431901	alro@alro.ro	Slatina
66219	S.C. SAPA S.R.L.	Cicio James	Str. Tudor Vladimirescu, Nr. 2	0040257307800	sapa_office_ro@sapagroup.com	Chișineu Criș
69141	S.C. GEROMED S.A.	Doboș Rodica	Șoseaua Sibiului, Nr. 38	+40269846161	office@geromed.ro	Mediaș
87341	S.C. PHILIPS S.R.L.	Dumitrescu Alexandru	Barbu Văcărescu 301-311	+40212032060	lighting.romania@philips.com	București

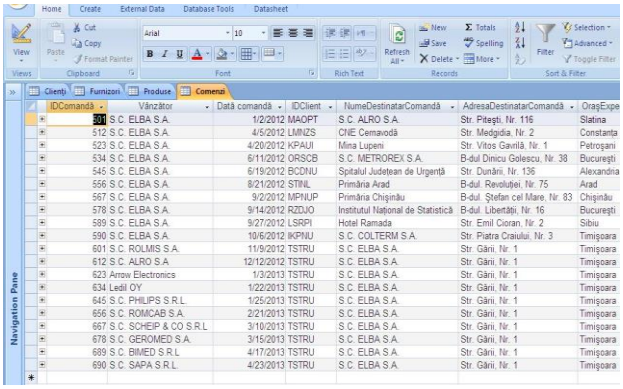
Fig.3. Suppliers table

After the information has been divided into the tables in Fig. 2, 3 and Fig. 4., a useful association of information is needed. For example, for orders made between the Suppliers in Fig. 3. and Products in Fig. 4. tables in the database, there is a one-to-many relationship because a vendor can deliver as many products as possible. Thus, for any supplier in the Suppliers table in Fig. 3. there may be many products in the Products table in Fig. 4. To make a one-to-many relationship, the primary key in the Supplier table was used and the same field was added to the Products table. The Access database uses the supplier ID number in the Products table to find the right supplier for each product. The IDSupplier column in the Products table is called the foreign key being a binding field because it is the primary key of the first table.



IDProdus	Nume produs	Preț unitar	Unități comandate	U M	Preț total	IDFurnizor
1	Delphin Led	€150.00	2000	buc	€300,000.00	22194
2	CFS 03	€240.00	400	buc	€9,600.00	22194
3	AV 02 B	€210.00	120	buc	€25,200.00	22194
4	UFO 02	€20.00	50	buc	€1,000.00	22194
5	Bactericid BSR 02	€60.00	62	buc	€3,720.00	22194
6	Matrix Led	€200.00	100	buc	€20,000.00	22194
7	Platos FIRA 07	€75.00	130	buc	€9,750.00	22194
8	FIRA 02	€62.00	130	buc	€8,060.00	22194
9	PSFL Led	€25.00	105	buc	€2,625.00	22194
10	LBEX 02	€187.00	82	buc	€15,334.00	22194
11	Profil aluminiu extrudat	€5.00	2000	kg	€10,000.00	12786
12	Tablă zincată	€1.00	10000	kg	€10,000.00	45789
13	Leduri Cree	€1.20	50000	buc	€60,000.00	32176
14	Lentile	€0.80	50000	buc	€40,000.00	43991
15	Lămpi de sodiu	€5.00	5000	buc	€25,000.00	87341
16	Conductori	€0.30	10000	m	€3,000.00	31748
17	Ambalaje din carton	€1.00	10000	buc	€10,000.00	27118
18	Sticlă securizată termic	€1.60	2000	buc	€3,200.00	69141
19	Introducătoare de cablu	€0.65	10000	buc	€6,500.00	32176
20	Profil aluminiu extrudat	€4.50	800	kg	€3,600.00	66219
		€0.00			€0.00	

Fig.4. Products Table



IDComandă	Vânzător	Dată comandă	IDClient	NumeDestinatarComandă	AdresaDestinatarComandă	OrașExpe
501	S.C. ELBA S.A.	1/2/2012	MAOPT	S.C. ALRO S.A.	Str. Pitești, Nr. 116	Slatina
512	S.C. ELBA S.A.	4/5/2012	LMNZS	CNE Cernavodă	Str. Medgidia, Nr. 2	Constanța
523	S.C. ELBA S.A.	4/20/2012	KPAUI	Mina Lupeni	Str. Vitos Gavriilă, Nr. 1	Petroșani
534	S.C. ELBA S.A.	6/11/2012	ORSCB	S.C. METROREX S.A.	B-dul Dinicu Golescu, Nr. 38	București
545	S.C. ELBA S.A.	6/19/2012	BCDNU	Spitalul Județean de Urgență	Str. Dunării, Nr. 136	Alexandria
556	S.C. ELBA S.A.	8/21/2012	STINL	Primăria Arad	B-dul. Revoluției, Nr. 75	Arad
567	S.C. ELBA S.A.	9/2/2012	MPNUP	Primăria Chișinău	B-dul. Ștefan cel Mare, Nr. 83	Chișinău
578	S.C. ELBA S.A.	9/14/2012	RZDJO	Institutul Național de Statistică	B-dul. Libertății, Nr. 16	București
589	S.C. ELBA S.A.	9/27/2012	LSRPI	Hotel Ramada	Str. Emil Cioran, Nr. 2	Sibiu
590	S.C. ELBA S.A.	10/6/2012	IKPNU	S.C. COLTERM S.A.	Str. Piatra Craiului, Nr. 3	Timișoara
601	S.C. ROLMIS S.A.	11/9/2012	TSTRU	S.C. ELBA S.A.	Str. Gării, Nr. 1	Timișoara
612	S.C. ALRO S.A.	12/12/2012	TSTRU	S.C. ELBA S.A.	Str. Gării, Nr. 1	Timișoara
623	Arrow Electronics	1/3/2013	TSTRU	S.C. ELBA S.A.	Str. Gării, Nr. 1	Timișoara
634	Ledil OY	1/22/2013	TSTRU	S.C. ELBA S.A.	Str. Gării, Nr. 1	Timișoara
645	S.C. PHILIPS S.R.L.	1/25/2013	TSTRU	S.C. ELBA S.A.	Str. Gării, Nr. 1	Timișoara
656	S.C. ROMCAB S.A.	2/21/2013	TSTRU	S.C. ELBA S.A.	Str. Gării, Nr. 1	Timișoara
667	S.C. SCHEIP & CO S.R.L.	3/10/2013	TSTRU	S.C. ELBA S.A.	Str. Gării, Nr. 1	Timișoara
678	S.C. GEROMED S.A.	3/15/2013	TSTRU	S.C. ELBA S.A.	Str. Gării, Nr. 1	Timișoara
689	S.C. BIMED S.R.L.	4/17/2013	TSTRU	S.C. ELBA S.A.	Str. Gării, Nr. 1	Timișoara
690	S.C. SAPA S.R.L.	4/23/2013	TSTRU	S.C. ELBA S.A.	Str. Gării, Nr. 1	Timișoara

Fig.5. Orders Table

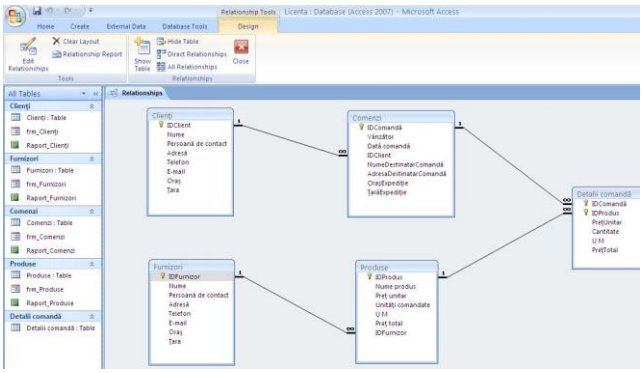
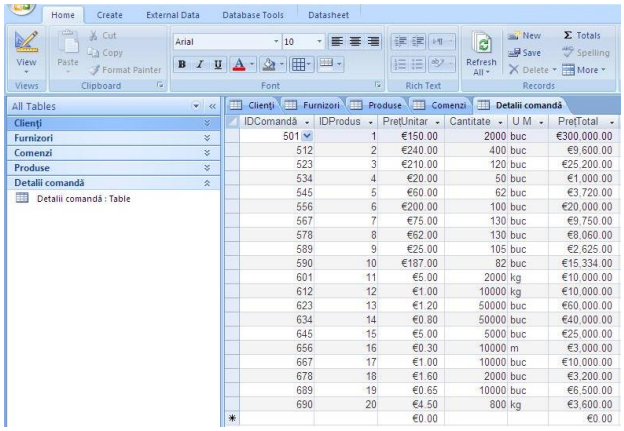


Fig.6. Relationships between tables

Between the Product tables in Fig. 4. and Commands in Fig. 5. there is a many-to-many relationship type. An order may include several products. On the other hand, a product can appear in multiple commands. Therefore, for each record in the Orders table in Fig. 5. there may be several entries in the Products table in Fig. 4. and vice versa. This is a problem in making a direct link between the tables. The answer is the creation of the third table, called the intermediate table, which separates the relationship from many-to-many in two simple relationships one to many. The primary key of each of the two tables was inserted into the third table called Command Details, the two fields together representing the primary key for this table. Using the IDOrder field alone does not work as a primary key for this table because a command can have multiple elements. IDOrder, is repeated for each entry in a command, so the field does not contain unique values. Neither the use of the IDProduct field alone does not work because a product can appear in several different commands. But, together, the two fields always produce a unique value for each record, S. Johnson [4].



IDComandă	IDProdus	PrețUnitar	Cantitate	U M	PrețTotal
501	1	€150.00	2000	buc	€300,000.00
512	2	€240.00	400	buc	€9,600.00
523	3	€210.00	120	buc	€25,200.00
534	4	€20.00	50	buc	€1,000.00
545	5	€60.00	62	buc	€3,720.00
556	6	€200.00	100	buc	€20,000.00
567	7	€75.00	130	buc	€9,750.00
578	8	€62.00	130	buc	€8,060.00
589	9	€25.00	105	buc	€2,625.00
590	10	€187.00	82	buc	€15,334.00
601	11	€5.00	2000	kg	€10,000.00
612	12	€1.00	10000	kg	€10,000.00
623	13	€1.20	50000	buc	€60,000.00
634	14	€0.80	50000	buc	€40,000.00
645	15	€5.00	5000	buc	€25,000.00
656	16	€0.30	10000	m	€3,000.00
667	17	€1.00	10000	buc	€10,000.00
678	18	€1.60	2000	buc	€3,200.00
689	19	€0.65	10000	buc	€6,500.00
690	20	€4.50	800	kg	€3,600.00
		€0.00			€0.00

Fig.7. Order details

From the Order Details table, all products in a given order can be determined. Also, all commands for a particular product can be determined.

The forms in Fig. 8 - Customer Form, are the main windows used to enter and display data in Access. Forms allow data to be presented in a form that eliminates user concerns about how data is stored.

A database form allows the user to view records from multiple associated tables, sort them according to needs, and move more or less randomly from one record to another.

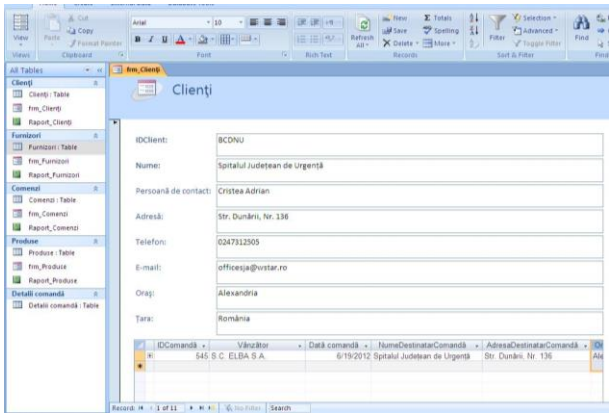


Fig.8. Customer Form

The final product of database applications are the reports. The Access program combines the data from tables and even queries, generating a report like the one in Fig. 10 that can be printed and distributed to those who need it or asks for it. The report never allows access to modify data, it sequentially tracks the records to generate subtotals and summaries by S. Johnson [4].

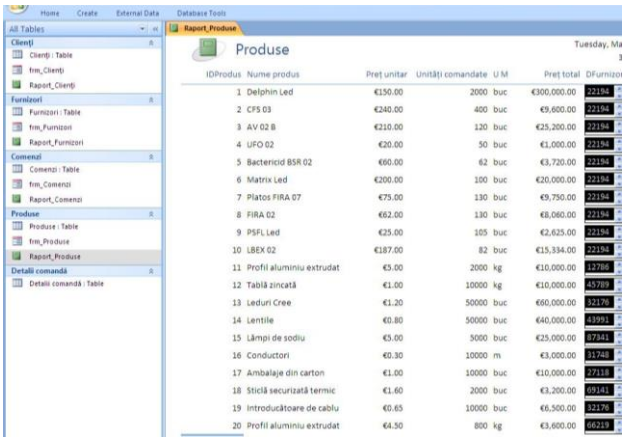


Fig.9. Products report

From the multitude of data storage and processing solutions, Microsoft Access has been chosen, as it is an accessible and widespread program that can be used without the need for specialized software acquisition by A. A., Mihărtescu [5]. The databases made in ACCSES can be made and used by any company, especially small and medium businesses that do not have much financial resources for the acquisition of expensive IT solutions.

IV. The Advantages of Using Marketing Databases

Compared with older methods of recording data on different activity sheets (written documents) or even in electronic files, database systems offer considerable advantages, which explains their extensive use. Some of the advantages of using the databases are:

1) High *compactness compared to the volume of written documents or uncorrelated files.*
2) *High speed of retrieving and updating of data using database queries.*
3) *Reduce redundancy of stored data by sharing data between multiple users and applications. In storing data on paper or in files, each application contained its own data sets. In database systems, multiple applications can use shared data once stored.*
4) *The possibility of introducing standards on data storage, which allows the interchange of information between different organizations.*
5) *Maintaining data integrity through security policy (access rights differentiated by user role), managing transactions and recovering data in case of malfunction of different hardware or software components.*
6) *Independence of data over the hardware used. Database management systems provide an external (logical) view of data, which does not change when physical memory is changed, which ensures the immunity of the database structure and applications from changes in the hardware system used.*

The advantages of using information technology are usually reflected in two types of results: cost reduction and profitability.

V. Conclusions

Companies that use marketing focused on databases, and who have previously established a clear strategy in this respect, finds that applying this method reduces the costs associated with marketing activities, significantly increases profit margins and at the same time increases customer loyalty. The difficult to overcome in applying this type of marketing lies in the technical field, the development of long-term forecasts and the mentality of managers of small and medium-sized enterprises that do not accept changes and are not receptive to the advantages of information technology.

The proposed database model is accessible to any small and medium-sized enterprise, both in terms of deployment costs and ease of use.

The golden rule is that marketing databases contribute to the control of sales and marketing activity in the most profitable way, with the lowest possible cost. Some specific advantages can be gained, such as increased understanding of customer requirements, through the use of specialized databases during marketing research.

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