

Major Trends in the Development of the Marketing Information System



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Abstract. *Marketing data base is a very useful instrument through which you can use the marketing information from the internal system of the firm and any other information from the outside environment in order to reach the marketing objectives and functions.*

The development of a modern marketing information system using the systems of the unique data bases offer the possibility of stocking and using of an incredible volume of marketing information of numerical nature, text, graphic, sounds, voice and video images, simple and easy to access through automatic procedures delivered by the host systems of data bases administration (SGBD), locally or at distance.

Key words: marketing information system; internal and external environment; informational data flows.



Introduction

In order to work efficiently with the data bases of marketing, you must dispose of relevant, current, available and truthful information necessary for the consolidation of the marketing decisions.

In the development of the marketing information system, one of the most important and difficult stages is the critical analysis of the informational system of marketing with the identification of the informational sources, of the informational flows and links and the projection of the new informational system by defining the specific software instruments which may create and update continuously the data bases with pertinent, truthful and available information and which may serve optimally the requirements of the management informational system of marketing.

The lack of a performant marketing information system and an updated at the level of modern instruments offered by the technology of information, of the multimedia technology and of communications determine several times the specialists to declare themselves unsatisfied of the available information, either they do not have access or they do not know where to find the most important information within the enterprise or in the external environment of marketing, they obtain too much information that they cannot use and too little that is truly necessary for them, they obtain information too late or they doubt of its correctness. The organisation of data in unique data bases offers the possibility of reducing the redundancy and the bureaucratic character of the

information processing, minimize the cost of data processing, offer the consult of the same sources of information by all the members of the group and the almost instantaneous access to the information that made the object of the data bases updating, reducing the time of response, ensures stocking support of a volume practically unlimited of information and offers facilities of fast re-finding and selection following multiple, heterogeneous and creative criteria, ensures high protection and safety to the information.

1. The informational requirements and the instruments used

The management of many enterprises was not yet adapted to the informational requirements in nowadays, which may allow them to carry out some efficient activities of marketing. The need of marketing information is more acute as ever, following some tendencies manifested at the market level (Kotler, 1997, p. 174) by passing:

- *From a local marketing to a global one* as the enterprises extend their markets and area of action;
- *From the client's needs to his/her desires.* As the incomes of the buyers increase, the offer of to the competitors is richer, they become more and more cautious in the selection of the bought goods.
- *From the competition in the price sphere to the competition non-based on price.* As the sellers use more and more brands, the differentiation of products, the advertisement and the sales promotion, they need information with respect to these instruments of marketing;
- *From the hardware voluminous and rudimentary components to the new informational technologies.* During the last years, we have witnessed the apparition of the computer, of the micro-films, cable television, Xeroxes, faxes, radio cassettes, video apparatus, video disks and other products which have revolutionized the informational process.

The marketing activity of a modern enterprise is closely related to the information came from the *internal and external environment*, which represents the main source of information of the data bases of marketing.

The environment where the enterprises function holds a great quantity of valuable information (see figure 1). Most often, this information do not end in the possession of the marketing specialists in due time, which makes that the taken decisions to have a higher degree of risk and incertitude.

Depending on the environments with which the firm interacts frequently, the information has a value characterised through: specificity, truthfulness, freshness, availability, etc. The information practically comes from

three environments: macro-environment, micro-environment and internal environment or the enterprise itself.

The performances of the enterprises' informational systems of marketing depend on the manner of which it manages to use this information. If the data offered by the macro-environment are only general, the other two environments offer information of great value to the marketing department, which may be used in taking some decisions and elaborating some strategies.

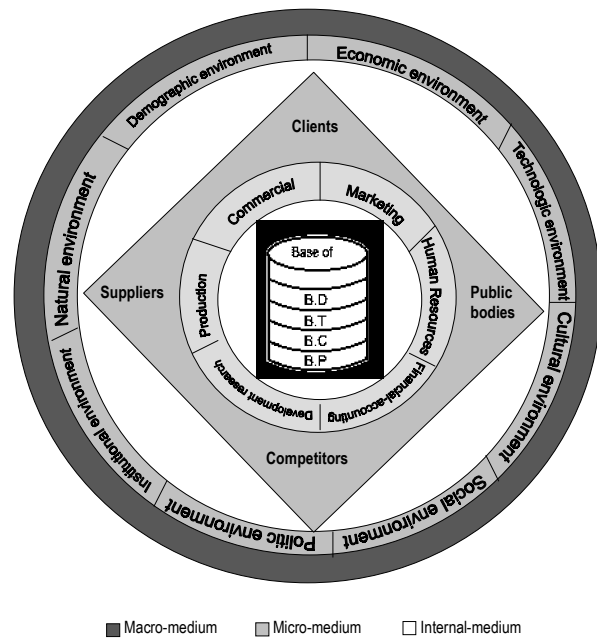


Figure 1. In-flow data source in the marketing data bases

The data sources and the informational flows afferent to a data base of marketing may be structured as it follows (see figure 2):

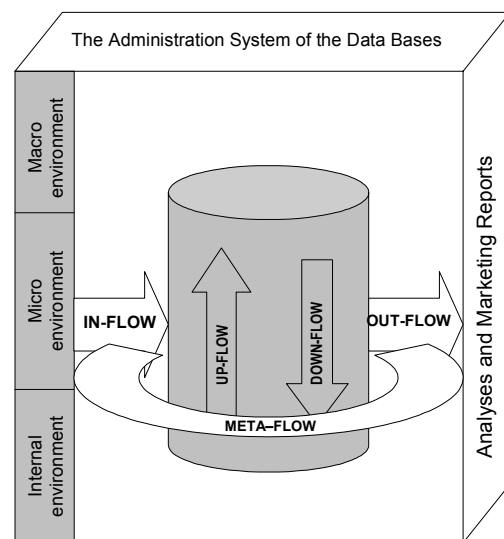


Figure 2. The informational flows afferent to the data base

- *The in-flow* represents the entrance and integration source in data bases.

For the data came from the transactional applications, it is firstly raised the issue of generating, selection, extract and introduction of these in the data base.

The localisation of the information on the environment components and the establishment of the specific sources of obtaining them involves the evaluation of the information with respect to their relevance for a certain application developed on the respective data base.

- *the digital form* used in the computational systems where the information is represented under the form of a sequence of binary values (informational systems of administration, automatic system of processing the administration orders of the sales, of telemarketing, automatic systems of marketing researches, data bases of the suppliers, of the clients, competitors, data bases of the firms, public data bases, knowledge bases, etc.).
- *The up-flow* is represented by the multitude of processes through which is added informational value to the data.
- *The down-flow* ensures the optimisation of the access to the structure of the data base.
- *The out-flow* represents the multitudes of data exits towards the users.
- *The meta-flow*

2. The structure of the marketing data bases

The in-data from the internal and external marketing environment (sales, supplies, orders, cashings, payments, clients, suppliers, competitors, products, prices etc.) are organised in distributed, relational and orientated towards the object data bases. The tables represent the objects of the data base which stock the data. A table consists of *fields*, which are columns to which is attributed a name, each of them containing a data type and a well-mentioned dimension. The multitude of fields forms *the structure* of the data base. The content of the data base is formed of the multitude of *records*, represented by the table's lines.

A standard structure of a marketing data base must allow the administration of all the data that refer to: products/services, prices, distribution, promotion, suppliers, buyers/clients, the sale forces, to the processes of supply, stocking, stocking, sale, invoicing, etc.

The representative data tables contained in a standard structure of a marketing data base, organised at the internal level, are:

■ The table Product/Service

- products, sorting range, brands, physico-chemical and quality attributes and characteristics, packaging;
- the structure of the products' line, the change of the product;
- prices, discounts offered, grouped sales, promotional prices;

- rival products, competitive products, the acceptance degree, the potential of the new product.

■ The table Prices

- the costs, the formation means of the final prices, the differentiation of prices on products lines;
- strategies of prices, seasonal or specific discounts, offered reductions.

■ The table Buyer/Client

- the identification data (address, telephone number, e-mail);
- the acquisition date, the source, quantity, price of sale, bought products;
- the history of buyings and payments (products, quantities, means of payment, changes referring to products, the quantities and frequency of the orders, retards of payments, returns);
- data referring to the contracts for sale (telephones, the direct force of sale, retail dealers, distributors, the banking accounts, the destination address of the buyers, etc.);
- the groups of influence or the decision persons;
- the action domain of the client: local, zone, national level;
- the profile of the annual expenses, motivations and compartmental, segmentary inclinations;
- the client's profile (geodemographic, incomes level, offered facilities, financial data referring to credits, the number of employees, evaluation score of the frequency and values of the acquisitions, grouping and segmentation);
- history of the business contracts (data, type of contract: by phone, by correspondence, personal, results obtained);
- history of the offer demands, the plans referring to the future acquisitions;
- the product use (how the individual products or the products of the rivals are used);
- profile of the satisfaction level of the client;
- preferred methods of contact;
- the distribution channel which is allocated to the client (representative, branch, dealer, etc.).

■ The table Suppliers

- the identification data (address, telephone/fax number, e-mail, person of contact, banking accounts);
- offers of products (sorting range, reference data, attributes, characteristics, facilities);
- the order and the means of honouring it (number, date, products, price, quantity, frequency, time of honouring, franco relation, delivery conditions, arrival date);
- the history of supplies and payments (products, quantities, means of payment, the persons of contact, retards of deliveries, returns, etc.);

- the supplier profile (geodemography, specialisations, financial data, number of employees, grouping and segmentation).
- **The table of the sale forces**
 - name, code, address, other data of classification;
 - history of the sales volume (quantity and value);
 - the area and the allocated clients;
 - the sold products;
 - the received commissions;
 - the sale shares, ordering on categories and the levels of incomes or other statistic data referring to the registered performances.

The same data may also be found in the tables that refer to the dealers, distributors, manufacturers etc.

3. Techniques of accessing the marketing data bases

The access to data is performed over the marketing data base through *query and updating*. The query (re-finding) is complex and involves: visualisation, consultancy, editing out-situations (reports, lists, punctual re-findings), turning over. The update involves the three operations: adding, modification, and erasure of the records from the data collections.

The access to data is realised through orders from the manipulation language of data (LMD) or through specialised query languages which may be included in LMD or may exist as such, depending on the SGBD used. The specialised languages appeared due to the extension of the range of data bases users and involve facilities of

query/ re-finding, simple and friendly, closed to the human manner of work and thinking. The most popular, representative and the only standardized language from the domain of data bases is the *structures query language*. The SQL language ensures direct, “live” access to the data existent in the marketing data bases and is determined of the SGBD used, of the organisation and stocking manner of data, of the folders’ capacity, of the hardware necessities and of the possibility of being integrated in the informational system of the enterprise.

The most facilities of access to the data bases are offered by the administration systems of the data bases completely relational – SGBDR.

Projected initially for the processing of the on-line transactions such as booking of tickets or processing the orders, these systems may perform hundreds of updating on minute, activities realised simultaneously of several operators. The main advantage of the relational systems is that they give the possibility of integrating all the information referring to orders, marketing, sales in a single data base, independently of the nature of the data used.

These systems are expensive, require performant hardware equipments (servers endowed with RISC processors or even mainframe) and there is a strong connection between the structure of the data base, its dimension and the hardware platform.

Depending on the model of logical organisation of the data in BD, of the used SGBD and respectively the hardware and software platforms from the marketing informational systems, a variety of access types to the marketing data base may be identified.

The access types to the marketing data base

Table 1

Type tool	Basic question	Example of question	Example of answer
Query and reporting (SQL)	What happened?	What were the sales for a certain product?	The monthly reports of sales on product.
Analytic processing on-line (OLAP)	What happened and why?	Classify the sales on months, products and chains of stores. To what extent would influence the profit the increase with 10% of the sales in the districts from Moldova?	Monthly sales on products and ordering stores, top, etc. Estimations of the profit.
Informational systems	What I should know at present?	Which is the evolution of the sales on significant clients? What influences the sales of the product X in Bucharest?	Concise reports for decision.
Data mining	What is interesting? What could happen?		Predictive models with factors of influence.

4. The technology client/server

The *technology client/server* is closely related to the technology of the distributed data bases and of the computer networks use.

The architecture client/server is an assembly of three main components: a server, a client and a network which

connects the client computer to the server in order to collaborate for the accomplishment of the tasks.

The client requires to the server query (interrogation) and updating (transactions) services of the data from the data base and receives from this the results.

The server ensures the connection/disconnection of the client to the data base, the access to the stocked data and the protection of the data base.

The technology client/server ensures:

- the development of applications which require *data located on different computers*, in different geographical points. These data may be in compatible formats or in incompatible formats. In the conditions when the majority of the firms have branches, subsidiaries in several points of a country or in several countries, applications as the above ones are very frequent;
- the development of some *interactive applications*, adapted to the demands of the users. They shall use the applications accessing the data from mainframes as easily as the data from the working stations (personal computer PC).
- *the access to the* stocked, processed and re-found *data volume* of great complexity. These things are indivisible for the user and the presentation form of the results may be understood by all the categories of users.

In conclusion, the purpose of the architecture client/server is to allow the development of the complex applications, which deals with a great volume of data, accessible to all the categories of users, from different computers, situated locally or at distance.

The model client/server allows the repartition of the processings and of the data in the assembly of the marketing informational system, ensuring the optimal exploitation of the hardware resources and its re-dimensioning caused the multiplication, sometimes anarchical, within the enterprises. The technology client/server is therefore synonym with the reasoning of the informational systems but also with the integration of the heterogeneous informational resources existent in enterprises.

The use of the client-server model brings a series of *advantages*:

- offers the possibility to a global system of information;
- ensures the repartition of the calculation power within the informational system, the integration of the existing technologies in the enterprise with the newly bought ones;
- ensures the modularity and the flexibility of the software and hardware components;
- allows the acquirement of an individual high productivity because each user may have access to the information from the marketing data base;
- the required information are obtained in a very short time;
- allows the break of the organisational barriers and their data bases are distributed in several local networks;
- due to the availabilities of access to distance, a user at distance may access the information from the central data base or the distributed local bases;

- increases the adaptability and the enterprise reaction to the changes produced in the environment.

On the grounds of the technology client-server, *the middleware products* occurred and developed, bringing efficient and economic solutions in enterprises, for inoperability issues between informational applications, networks, operation systems and databases.

The middleware instrument is the software component of the system which ensures the connexion between the server Web (from Intranet or Internet) and a marketing data base. Examples of software instruments of middleware type: Oracle WebServer for Oracle, WebSQL for Sybase, EDA/SQL for Focus etc. A middleware instrument responds to the calibration necessities of the systems of information as close as possible to the demands of use.

The most spread middleware product in the world is EDA/SQL (Enterprise Data Access/SQL) realised by Information Builders. To Information Builders, the 20 years of experience in the domain of the support systems of assisting the decisions using the Focus product determined the research teams to project some tools through which may offer the users access to the most varied data bases, from a more and more powerful and performant PC. Therefore, EDA/SQL allows the connection of any application SQL with over 60 data bases, resident on 35 different systems of operation, through 14 different protocols of communication

The enterprises, using a middleware product, integrate a component (tool) in the informational systems, component which ensures the administration of the difficult problems of the *inoperability*. Using EDA/SQL, the enterprises find an answer to the necessity of integrating the new technologies, but also the desire to preserve the current informational context.

The enterprises dispose of an informational park relatively heterogeneous and the working posts are “isolated” from an informational point of view, preventing therefore the entire realisation of the anticipated productivity gains. With EDA/SQL, this barrier is immediately cancelled because the product establishes a strong and transparent connection between any EDA/SQL (Structured Query Language, language used in query, the updating of the data bases) application and the assembly of the informational applications.

The technology client/server allowed the possibility of “informational chaining” of the enterprise. This progress is translated physically through the presence of the computer on all the desks, in all the departments, branches or on site at the sale forces by cabling the majority work posts and by constituting the network which offers the necessary support for the consultancy of the marketing data bases both inside and outside the enterprise.

References

- Kotler, Ph. (1997). *Managementul Marketingului*, Editura Teora, București
- Marshall, K. (1995). *Marketing Information Systems*, Editura Howard W. Sams și Co, New York
- Marshall, K.P, Lamotte, S.W., „Marketing Information Systems: A Marriage of Systems Analysis and Marketing Management”, *Journal of Applied Business Research*, vol. 8, nr.3, 2004
- Mihail, Nora (2004). *Decizii de producție*, Editura Economică, București
- Orzan, Gh., Orzan, M. (2007). *Sisteme informatice de marketing*, Editura Uranus, București
- Orzan, Gh. (2007). *Sisteme expert de marketing*, Editura Uranus, București
- Stancu, S., Mihail, Nora (2007). *Metode și tehnici de conducere*, Editura Economică, București