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Use of information and analytical apparatus in organization of the main business processes of an enterprise

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Abstract. The article is devoted to assessing the effectiveness of marketing research as part of the management process that affects management decision-making. The basic concepts of the information system of the enterprise, as the basis of the information-analytical apparatus in the organization of the enterprise, are revealed. The advantages and disadvantages of primary marketing information and secondary marketing information, as well as their main sources are considered. The main functions of marketing information systems are also presented. The features of the organization of information support are presented. The factors affecting the indicator of the effectiveness of marketing activities of the enterprise, their interdependence, the nature of their influence on the indicator of efficiency are revealed. The concepts and examples of expert systems are also considered. The fundamental differences between knowledge as a form of information and information are presented.

1. Introduction

The integration of the marketing approach into the general management system at an enterprise requires, first of all, a revision of the basic principles of management. This is largely due to the need to increase the flexibility of internal business processes and their coordination with the overall strategy of the company [1, 2]. The concept of managing individual business processes, which allows you to adapt to changes in the environment in a timely manner, is becoming increasingly relevant. Priority attention is being paid to improving the efficiency of information communications between the internal and external environment of the enterprise [3-6].

The business process management system as a basic element should consider the changing needs of the external environment, and the marketing management system as the main information contour. Information-based management provides for the determination of quantitative proportions and dependencies between market phenomena and the factors that influence them [7, 8]. Based on the conclusions and recommendations received at the analysis stage, strategic marketing planning is carried out, the structure of the marketing complex is specified, and conformity assessment of actual and forecasted indicators is carried out [9, 10].

Marketing information is facts and figures that in a certain way relate to the marketing activities of the enterprise, characterizing its marketing environment.



Marketing Information System (MIS) is an expert system that covers individuals, equipment and procedures for collecting, sorting, analyzing, evaluating and distributing the necessary timely and reliable information used in making marketing decisions.

2. Primary and secondary marketing information

Typically, marketing information is divided into primary and secondary. Primary information is data obtained as a result of specially conducted field research to solve a specific marketing problem.

Advantages of primary information:

- Collection in accordance with the exact purpose.
- Known and controlled collection methodology.
- Results are available to the company and may be protected from competitors.
- Known reliability.

Disadvantages:

- A large amount of time for gathering and processing.
- Costliness.
- The firm itself cannot always collect all the necessary data.

Secondary information is data previously collected for purposes other than the objectives of a specific marketing research. Sources of secondary information are divided into internal (company documentation: budgets, reports, accounts, stocks, previous studies, etc.) and external.

The main sources of external secondary information are:

- Publications of national and international official organizations.
- Publications of government bodies, ministries, municipal committees and organizations.
- Publications of chambers of commerce and associations.
- statistical information collections.
- Reports and publications of industry firms and joint ventures.
- Books, magazines and newspapers.
- Publications of educational, research, design institutes and social research organizations, symposia, congresses, conferences.
- Price lists, catalogs, prospectuses and other company publications.
- Materials of consulting organizations.

Advantages of secondary information:

- Low cost in comparison with primary information.
- Ability to match multiple sources.
- Speed of receipt in comparison with the collection of primary information.

Disadvantages:

- Incompleteness.
- Obsolescence.
- Sometimes acquisition and processing methodology unknown.
- Inability to evaluate veracity.

The disadvantages of secondary information are primarily due to the fact that initially this information was collected for purposes that are usually different from the objectives of a specific marketing research. Therefore, to assess the reliability of secondary data, five basic questions should be answered:

- Who collected and analyzed this information.
- What goals were pursued in the collection and analysis of information.
- What information and how it was collected.
- What methods were the information processed and analyzed.
- How this information is consistent with other similar information.

Studies performed on the basis of secondary information, as a rule, are preliminary (review) and are descriptive or staged. With the help of such studies, it is possible to determine, for example, the general economic characteristics of the market, the situation in individual industries, national and other features when entering foreign markets.

3. The main functions of MIS

It is data collection, analysis, storage and transmission to interested parties. Using the marketing information system from various sources (external and internal) the necessary information is collected, processed and transmitted to decision makers.

The main functions of MIS, taking into account the structure of the marketing management cycle in the enterprise, are presented in figure 1.

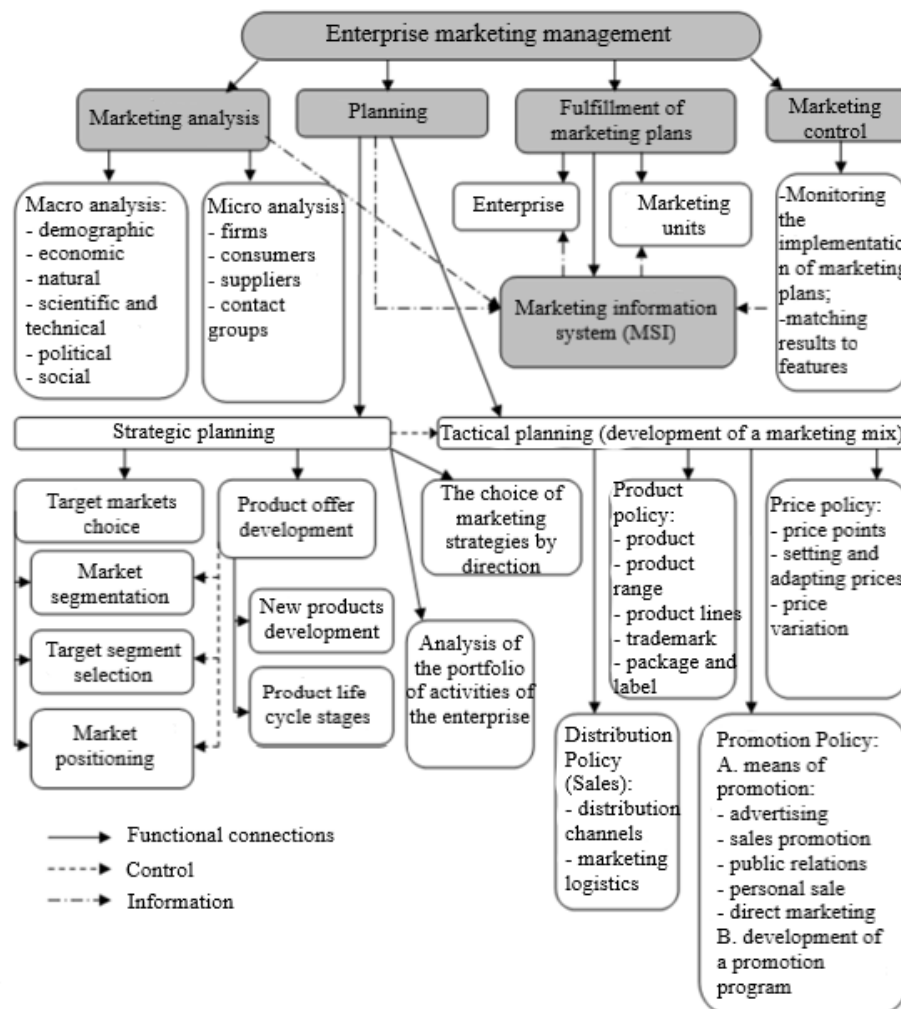


Figure 1. Marketing management on the basis of the information system.

It should be noted that the structure and functionality of MIS should largely depend on the specifics and scope of the enterprise. P. Kotler identifies four main blocks in the structure of MIS (figure 2).

The internal reporting system is responsible for the collection, processing, analysis of internal data. The company always has at its disposal very valuable information about stocks, sales volumes, advertising costs, revenue. The internal reporting system allows you to save this data and convert it into a convenient form for work, as a result of which you can analyze the profitability of specific goods / services, distribution channels, consumers, dynamics of sales volumes, etc.

The system of external information combines information about the state of the external environment of the enterprise, the market and its infrastructure, the behavior of buyers and suppliers, actions of competitors, measures of state regulation of market mechanisms, etc. Formal and informal procedures are used to collect current external information. Such information is obtained by studying books, periodically published and special publications, statistical collections, opportunistic reviews commercial research organizations; as a result of conversations with consumers, suppliers, distributors and other persons external to the organization; based on conversations with other managers and employees; through industrial and commercial espionage. Data is also collected by marketing specialists based on visits to exhibitions and conferences, negotiations and business meetings.

An analysis system of internal marketing information is a one-time analysis of internal information carried out to achieve a specific goal (for example, analysis of changes in the volume of sales of a product after a change in its price or an advertising campaign). Such an analysis is carried out whenever this becomes necessary.

Marketing research system: based on information obtained as a result of researching specific areas of marketing activities. These, for example, include such types of studies as analyzing market parameters and its development by competitors, studying the trends in business activity of partners, price policies and methods of promoting products, reactions to new products, etc. The purpose of marketing research is to obtain accurate and reliable data on specific problems of marketing activities necessary for management to make informed decisions. Such information is not collected in previously reviewed systems. Such activity is carried out periodically, as certain problems arise, based on the use of special methods for collecting and processing the collected data.

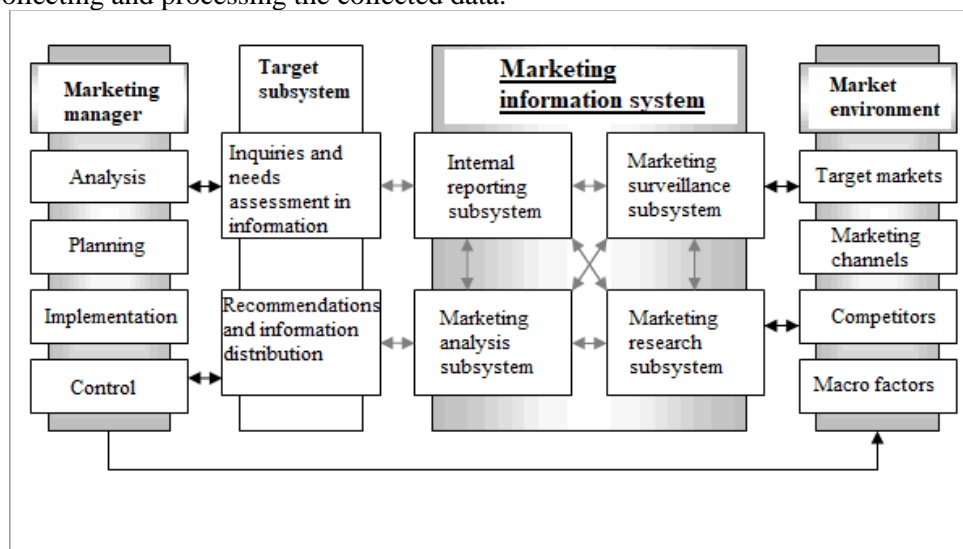


Figure 2. Structure of marketing information.

4. Features of information support organization

The collection of information in the system of continuous monitoring and storage of marketing data occupies a significant place among all marketing operations, as it is associated with various sources of information. From the perspective of a comprehensive study of market needs in order to meet consumer needs and maximize profits for the implementation of marketing activities, it is necessary to have information about all parts of the marketing environment: the market for goods and services; on the production of goods and services; about the external macro environment related to production and the sales market.

Information on the market of goods and services includes information on: nomenclature, supply and demand, potential market opportunities, distribution of market shares and sales channels, competitors,

price levels, effectiveness of advertising events. In MIS, this block of information corresponds to external information.

The information of the internal production environment contains data on: profit and loss of the enterprise, profitability of the release of goods, production reserves and stocks, production costs, scientific and technical potential, personnel qualifications, specialization of production, pricing. In MIS, this block of information corresponds to internal information.

Another component of marketing research is assessment of capabilities of the enterprise in order to establish the conformity of its market demands to internal production and resource capabilities. The collection and processing of information in this direction involves: accounting and analysis of the production capacity of the enterprise, accounting for the product range, assessment of the technical level of goods, accounting for production costs, etc. Data sources are the balance sheet, financial statements, production plans, technical specifications, RTD plans, etc.

The activities of the enterprise are also constantly affected by the external environment. These factors, unlike internal ones, are more stable, but due to their nature they are not susceptible to the impact of marketing activities, forcing the company to adapt to environmental conditions. Their study is important, since in most cases they have a significant impact on the general state of affairs.

Sources of secondary market data and the external macro environment may be:

- The publication of the general economic orientation.
- Special books and journals.
- Technical media channels.
- Mass advertising.
- Exhibitions, presentations, meetings, conferences, open days.
- Issued laws and acts, presidential decrees.
- Speeches by government, political and public figures.
- Published accounting and financial statements of enterprises.
- Branded sales demonstrating product capabilities.
- Publications of specialized economic and marketing organizations, various public organizations.
- Commercial bases and data banks.
- Channels of personal communication.

The considered features of the organization of information support for marketing activities allow us to conclude that the creation of effective marketing information systems requires a creative approach from marketing specialists, and the use of modern computer technologies for large amounts of marketing information. The improvement of marketing decision-making processes at the enterprise has recently been associated with the development and implementation of expert systems.

5. Expert system

It is a set of special computer programs based on systemic accumulation, generalization and analysis of the knowledge of experts for use in the process of solving various problems.

In general, an expert system contains the following components: database, decision-making mechanism and user interface. The database is the heart and foundation of enterprise expert systems. There, the entire volume of the necessary marketing and other information should be stored, clearly delimited by direction, content, frequency, relations to different departments of the enterprise, etc. Information from the database becomes the basis for decision making.

The decision-making mechanism is the main component of the enterprise expert system. This is a set of tools that determine the order of their interpretation and use. In the process, the decision-making mechanism determines all conditions that can affect the final result.

The user interface is a software package designed to provide simple and convenient interaction between the expert system and the end user. It should be accessible and easy to use for everyone, since

it is assumed that a large number of users will simultaneously work in the system: from simple workshops workers to senior managers.

An expert system is advantageous to use, both with work relating to the internal information of the company, as well as external. Now many enterprises in each department (human resources, accounting, planning, department, financial services, etc.) have their own databases. Each of them duplicates the rest by 90% and only 10% contains the information necessary for this particular service. Therefore, it is recommended to use a single database.

The use of a single database rationalizes the activities of the enterprise, as it exempts from routine paper work at the enterprise, especially if it is an industrial production enterprise, ensures the quick flow of necessary information to departments and workshops. Due to availability of the database, marketing services are constantly aware of movement of materials in time and space for each supplier, order, product range, volume. The marketing service can instantly respond to every change in the business environment: cancel applications and contracts for resources that cannot be used in the near future, replace one type of raw material with another, and seek internal and external capabilities to meet production needs.

Database marketing is primarily intended to accumulate knowledge about customers, product distribution channels, data on suppliers and competitors. Customer information is the basis for planning both marketing and the activities of the company as a whole.

Using the data on turnover on an accrual basis, the company is able to instantly respond even to small fluctuations in consumer demand, to take ahead of the emerging issues of the market. If the database contains information about refusals of payment and their reasons, the manufacturer can, without requesting additional information, evaluate the shortcomings of his products, if necessary, quickly make the necessary changes and adjust the product in accordance with the needs of the client.

Information about potential customers of the enterprise is also important. Customer information can be used to plan a communications strategy and personal contact strategies. Information about competitors is very valuable both for planning future strategies and for timely, clear response of the enterprise from competitors. Any accumulated information about their activity should be concentrated in the database.

6. Knowledge as a form of information

In the formation and transformation of the marketing activity of the enterprise in addition to information, a category of knowledge is involved, which in this case is present in explicit and implicit forms. In this connection, the following forms of knowledge are distinguished (table 1).

Table 1. Forms of knowledge and their content.

Form of knowledge	Content
Individual	A system of acquired or developed concepts that mediate a person's attitude to reality
Codified	Signs, symbols (oral or written text, formulas, images, etc.). This is a kind of model of models that are held in consciousness. Their main functions are the transfer of knowledge in the process of communication, its fixation and preservation
Objective	intellectual models embodied in an objective form of activity processes, its tools and results
Internal	Inherent to this subject
External	Inherent in other subjects
Procedural	Schemes, algorithms, skills, operations, actions
Declarative	Reality models

According to the content in table 1, the following should be noted. The highest level of organization of activity lies in the ability to create new concepts of behavior in a changing environment, which requires not only the availability of certain knowledge, but also bringing them to a new quality for a holistic understanding of cause and effect relationships within this type of activity.

Knowledge is undoubtedly a form of information in which it can be shared with others. The fundamental differences between knowledge and information are presented in table 2.

Table 2. The fundamental differences between information and knowledge.

Criterion	Information	Knowledge
Problem	Does not give a solution	Gives a decision
Production value	Does not produce value	Produces added value
Competitiveness	Information ownership does not strengthen competitiveness	Knowledge is the foundation of competitiveness
Interdependence	The information contains knowledge in explicit and implicit form	Information is a tool for transferring knowledge between subjects
Volume	An increase in the volume of information does not mean an expansion of the boundaries contained in its knowledge.	The growth of knowledge leads to qualitative transformations in the knowledge system and the expansion of its borders
Attitude to the subject	Independent from the subject, objective	Depends on the subject's knowledge system, subjective
Generalization	Specific	The generalized form of cause-effect relationships of the phenomena contained in the information

According to Table 2, it should be clarified that the raw information alone does not provide a solution to business problems, does not produce value and does not strengthen the competitiveness of entities that own it. The distinction between knowledge and information in this sense is completely captured even by ordinary consciousness. Knowledge may or may not be explicitly contained in the information. Extracting knowledge from a stream or an array of information is an independent and rather complicated problem.

Knowledge and information differ in many respects. Information is always individual, specific. On the contrary, knowledge is a generalized form of fixing those causal relationships that information contains. Knowledge suppresses details, or, what is the same, it is reducible. Unlike information, knowledge is predictive

7. Conclusion

Thus, the advent of the information age brings profound changes to the organization of marketing activities of enterprises, the most important of which are the following:

- The crucial importance of knowledge about technologies and markets, their application and updating, to ensure competitiveness.
- The growing role of the time factor in the implementation of marketing opportunities and counter threats.
- The need for awareness of the relationships and interdependencies between the elements of micro and macro marketing environment.
- Strategic and tactical skills of forming network structures inside and outside the enterprise ("virtual enterprises", "symbiotic organizations") and their management in the principles of interaction marketing.
- Rising costs for managing the flow of marketing information and its protection.

These changes dictate the need to clarify the methodology for evaluating the effectiveness of marketing activities of the enterprise, which will track the volume and content of existing marketing information, the reliability of its protection, as well as the speed and effectiveness of its use.

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