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6. Theoretical aspects of marketing management at agricultural enterprises

6.1 The concept of marketing management in enterprises

In conditions of external uncertainty and military action in the country, the success of an enterprise depends on high-quality management, which allows the enterprise to achieve its goals while maintaining competitiveness in the market. Enterprise management is a complex process due to the existence of a large number of elements, the complexity of setting up communication channels between hierarchical levels, and the need to evaluate the performance of individual departments and specific employees. This complexity makes it relevant to use new approaches to management, namely marketing management.

Today, there is no consensus among modern management and marketing specialists on the definition of marketing management. For a better understanding of marketing management, it is advisable to consider the essence of the concepts of "management" and "marketing".

The first classical theory of management was developed in the early 20th century and became widely known around the world as the "scientific management" school, founded by F. Taylor. F. Taylor is considered the father of scientific management. His research into the problems of scientific organisation of production was, in essence, the first attempt to create a separate science of management [133].

The word "management" comes from English, meaning control, and in this context is often supplemented with additional characteristics such as the ability and art of managing and achieving goals. The Italian word "managgiare" means horse management and is used associatively to define any form of strict control through mastery of the art of achieving goals. The French term "manager" translates as to manage, to preserve, and from Latin, the root of the concept of "management" means active activity, power. Common to all concepts of is the definition of management as leadership, and a manager as a professional leader who works in an organisation on a contractual basis, i.e. does not necessarily have to be its owner [155].

The concept of "management" is interpreted quite broadly in scientific literature on management. American researchers M. Mescon, M. Albert, and F. Hedouri view management as the ability to achieve a set goal using the labour and intellect of other people, as a branch of knowledge that helps to perform this function, and also in the sense of the art of management, which manifests itself in non-standard, original decisions, quick reactions, and improvisation [168]. Koontz H. considers management to be the creation of an effective environment for people working in formal organised groups [148].

The term "management" began to be used in Ukraine in the early 1990s, which was caused by the collapse of the command-and-control economic system and the beginning of the country's integration into the global economic space.

Thus, I. Kulynich defines management as "management, leadership, as well as direction and administration" [142, p. 170]. Yakovenko V. asserts that "the essence of management lies in managing productivity and personnel" [198, p. 5]. Stakhov O. G., Yavnyuk O. I., Voloshchuk V. V. [132] define management as the process of planning, organising, implementing and controlling an organisation to achieve the coordination of human and material resources necessary for the effective performance of tasks. Scientists [155] consider management to be an independent type of professional activity, the main task of which is to achieve the goals set by the organisation through the effective use of all types of resources with the help of specific functions and management methods. In scientific literature, the term "management" is interpreted broadly and multifacetedly, but there are no contradictions between them; on the contrary, they complement each other, which allows us to understand the essence of management.

Marketing is one of the concepts that has become a hallmark of modern business. The word "marketing" itself appeared in the United States of America in the process of local farmers searching for a market for their products. It was about market getting. The chronology of marketing development shows that its first elements (price, sales, advertising) appeared as early as the mid-17th century. The rapid development of marketing took place in the 1950s and 1960s. The term began to be used in economic literature, and a scientific discipline with this name was introduced in universities [156].

Thus, F. Kotler and G. Armstrong [149] note that "...in a broad sense, marketing is a social and managerial process by which individuals and organisations obtain what they need and want through the creation and exchanging value with others. In a narrower business context, marketing means building profitable exchange relationships with customers related to value" [149]. Lamben J. [130] notes in his research that "...marketing is a social process focused on satisfying the needs and desires of individuals and organisations through the creation and voluntary and competitive exchange of goods and services for general use" [130]. According to Drucker P. [127], marketing is "...the central dimension of all business. It is the whole business from the point of view of the end result, i.e. from the point of view of the the customer" [127].

A significant impetus for the development of marketing practices in Ukraine was provided in 1988 by a group of specialists from the Ukrainian branch of the All-Union Centre for Public Opinion, Social and Marketing Research [132]. Since the mid-1990s, scientific activity in the field of marketing studies has intensified in Ukraine.

Voychak A. V. [126] believes that "...marketing is a philosophy and a set of tools for the formation, implementation and development of mutually beneficial exchange processes in society" [126]. The scientist presented his own classification of approaches to the study of marketing concepts, and also distinguished internal marketing depending on the internal market of the enterprise. Based on an analysis of literary sources, A. V. Voychak also identified different approaches to understanding the essence of marketing: from the point of view of management as a conceptual basis for activity, as a functional apparatus; from the point of view of a product – as an element of behavioural economics, as well as in terms of national and institutional levels [197].

In his research, S. S. Garkavenko [156] identifies three approaches to defining the essence of marketing: marketing as an independent type of entrepreneurial activity;

marketing as a management function; marketing as a modern vision of business philosophy [156].

Starostina A. O. [188] considers marketing primarily through the prism of organisational and managerial decision-making. She sees it as the basis for forming strategies for the development of a business entity and determining its place in the market (positioning). A. Starostina pays particular attention to identifying the impact of the environment on marketing and its relationship with the achievement of the main interests of enterprises [188].

Scientists [166] note that "marketing is the process of creating concepts for ideas, goods and services, their pricing, promotion and distribution through mutually beneficial exchanges in accordance with individual and corporate goals." According to the State Standard of Ukraine (DSTU 3294-95), "marketing is the process of planning and implementing ideas, pricing, promoting and selling ideas, products and services through exchange that satisfies the goals of individuals and organisations" [146].

Kovshova I. O. [189] notes that the formation of the complex concept of "marketing management" took place over a significant period of time with the accumulation of experience from various sources and under the influence of many factors. The scientist divides the dynamics of knowledge accumulation in marketing management into into four stages: 1) emergence (the emergence and development of proto-marketing and proto-management); 2) the separation of management and marketing as separate sciences; 3) the formation of the marketing management process within the two sciences and its separation into a separate field; 4) the development of the concept of marketing management [189].

The essence and structure of the definition of marketing management are presented in Table 1.1.

Table 1.1

Definition of the concept of "marketing management"*

Author	**Author's interpretation of the concept**
1. Conceptual approach from the perspective of classical management	
P. Drucker [130]	Marketing management is an integral part of the overall management process in an enterprise, where marketing is one of the functions of management
V. M. Kutsenko [153]	Marketing management is the process of analysing, planning, implementing and controlling measures aimed at establishing and maintaining mutually beneficial relationships with the target market in order to achieve the goals of the enterprise, which exists within the overall management system.
S. A. Yaromich, T. G. Velychko [201]	Management formulates goals, seeks resources, evaluates results, marketing serves as a means of achieving specific goals, and marketing management emerges as an integral part of the management system as a whole.
2. Conceptual approach from the perspective of classical marketing	
F. Kotler [150]	Marketing management is the process of planning and implementing concepts for pricing, promoting and distributing ideas, goods and services, aimed at exchanges that satisfy individual and organisational goals
O. A. Bilovodska [124]	Marketing management is the purposeful coordination and formation of all enterprise activities related to the market activities of the organisation at the market and society level in general and based on marketing principles
3. Conceptual approach from the perspective of managing the marketing services of an	
I. M. Komarnytskyi, H. V. Tsar [147]	Marketing management – analysis, planning, implementation and control of measures designed to establish, strengthen and maintain mutually beneficial exchanges with the target market in order to achieve specific business objectives
V. V. Rossokha, O. V. Gumenna, K. V. Pichik, N. V. Romanchenko [148]	Marketing management – a process (logical sequence of steps) for an enterprise to achieve its marketing goals
4. Conceptual approach from the perspective of enterprise management based on marketing	
M. I. Belyavtsev, V. M. Vorobyov, V. G. Kuznetsov [149]	Marketing management is the management of all general and specific functions of an enterprise, as well as all divisions of an organisation, based on marketing
A. V. Voychak, V. M. Shumenko [126].	Marketing management is the implementation of marketing philosophy and tools based on marketing research in the management of an organisation's activities

Continuation of Table 1.1

Author	Author's interpretation of the concept
4. Conceptual approach from the perspective of enterprise management based on marketing	
I. O. Tereshchenko, V. Yu. Gorilei [185], V. M. Bonadrenko [125]	Marketing management is implemented through a systematic, program-targeted mechanism of interaction between marketing and management tools to adapt the enterprise to changes in the marketing environment in order to maximise the satisfaction of consumer needs and the organisation's goals with the effective allocation of limited resources
I. O. Kovshova [189]	Marketing management is an innovative approach to enterprise management in conditions of internal and external environment volatility to achieve set structured goals in accordance with strategic objectives that comply with ethical norms accepted in society and allow achieving optimal performance levels, taking into account economic and social effects
O. S. Borysenko, A. V. Shevchenko, Yu. V. Fison, O. M. Krapk [164]	Marketing management should be understood as a logically structured sequential management system, which is the main type of management system aimed at achieving business goals and satisfying the needs of the target market and achieving its goals

Note. *Developed based on: [124 , 147-150, 153, 164, 191]

Based on the analysis of works by domestic and foreign scholars [124, 147-150, 153, 164, 191, 130], it was found that most of them equate the concepts of "marketing management" and "marketing management," but these concepts differ from each other. To understand the essence of the terms "marketing management" and "marketing management," it is necessary to conduct a theoretical analysis that will allow conclusions to be drawn about the interpretation of these concepts, as well as to determine their place and role in the management of a modern enterprise. A comparative description of the concepts of "marketing management" and "marketing management" is given in Table 1.2.

Having analysed various definitions of "marketing management" and "marketing management," we agree with L. V. Balabanova [117] that marketing management should be considered from the perspective of management functions as the management of marketing processes in an enterprise related to market research, sales and promotion of products and services to the market, and that marketing management is a broader concept than the general function of enterprise management, it is the management of all general and specific functions of the enterprise, as well as all divisions of the enterprise on the basis of marketing.

Table 1.2

Comparative characteristics of the concepts of "marketing management" and "marketing management"*

Author	Concept	Author	Concept
F. Kotler [150]	***Marketing management*** is the analysis, planning, implementation and control of activities designed to establish, strengthen and maintain profitable exchanges with target buyers in order to achieve specific organisational objectives, such as profit, sales growth and market share.	A. V. Voychak, V. M. Shumenko [126]	***Marketing management*** is the implementation of marketing philosophy and tools based on marketing research in the management of an organisation's activities.
N. I. Ivashkova [147]	***Marketing management*** is the most important functional part of the overall enterprise management system, aimed at achieving consistency between the internal capabilities of the enterprise and the requirements of the external environment to ensure profitability.	Yu. A. Sydoruk [191]	***Marketing management*** is a systematic, program-oriented mechanism for the interaction of marketing and management tools to adapt a company to changes in the marketing environment in order to maximise the satisfaction of consumer needs and organisational goals while effectively allocating limited resources.
R. Dixon [146]	***Marketing management*** is a diverse activity aimed at studying consumer needs and psychology.	O. A. Bilovodska [124, p. 13]	***Marketing management*** – purposeful coordination and formation of all company activities related to market activities at the enterprise level, at the market level and in society as a whole, based on marketing principles

Note. *Developed based on: [124, 126, 146, 150, 191]

As noted by O. A. Bilovodska [124], "marketing management has a place when the management of an organisation is based on the principles of , i.e. when the buyer (consumer) is placed at the centre of the organisation, and the marketing and management system combines all efforts to best meet the needs and demands of the parties involved in the exchange. In addition, marketing management considers marketing and management as inseparable, which also mutually penetrate and complement each other.

As a result of systematising the views of scientists [124, 130, 147, 153, 148, 149, 150, 164, 191,] on the concept of marketing management, we propose interpreting marketing management as marketing-based enterprise management aimed at adapting it to changes in the external environment and optimally using available resources to achieve the set goals and objectives of the enterprise, taking into account the satisfaction of consumer needs.

The effective implementation and use of marketing management by an enterprise requires, first of all, a clear understanding of the stages of development of marketing management, as well as the goals, principles and functions of its application.

Kovshova I. O. [189] distinguishes the stages of marketing management development, changing the focus and replacing eras with clear periods of historical development of marketing management in 10-year increments, starting from 1900, highlighting the following types of marketing management:

1. Hidden – characterises the period of the emergence of purely theoretical avant-garde ideas of democratic management based on the principles of achieving the common good.

2. Experimental – combines certain theoretical ideas with the first practical experience in the field of management, which marked the beginning of research in this area.

3. Functional – characterises the partial application of a new approach to management in certain areas of enterprise activity.

4. Production – corresponds to the production concept of marketing and is based on the hypothesis that consumers are more loyal to goods that are widely available and affordable. Therefore, the essential features of this type of marketing management include a focus on improving production, intensifying mass distribution of products in all possible markets, and simultaneously reducing costs to achieve a dominant position.

5. Product-based – based on the marketing concept of the same name and stems from the idea that consumers are more loyal to products with the highest quality, better

performance or innovative features and characteristics. Therefore, the essential features of this type of marketing management include focusing efforts on the continuous improvement of the product, its innovation, differentiation, and appearance in order to achieve the ideal.

6. Sales-oriented – also based on the marketing concept of the same name, the main hypothesis of which is that marketing pressure creates additional demand for goods among consumers. Therefore, the essential features of this type of marketing management include a focus on all possible tools for informing and stimulating sales in order to achieve a high level of product awareness while increasing sales volumes.

7. Marketing management of services - characterises the allocation of a separate market that has certain specific features and functions according to slightly different patterns. Therefore, the essential features of this type include focusing efforts on the characteristic properties of services (intangibility, variability of quality, lack of preservation and inability to distance oneself from the source) while simultaneously identifying the needs of target markets and ensuring the desired level of satisfaction in ways that are more effective and productive than those of competitors.

8. Social and ethical marketing management – based on the idea of creating goods and services that enable consumers and society as a whole to solve certain problems. This type of marketing management focuses on identifying basic needs and researching the interests of target markets to ensure effectiveness while preserving and strengthening the well-being of consumers and society as a whole.

9. Integrated marketing management involves developing a separate marketing programme that includes tools classified by J. McCarthy as the "4 Ps: product, price, place, promotion" and is coordinated with the company's strategic development plan to achieve maximum effect.

10. Marketing management of ideas – marks the emergence of a new market which, unlike the markets for goods and services, requires a developed legal framework and operates under copyright priorities. Marketing management in this area constantly strives to find a balance between the free presentation of ideas to create initial demand

and high prices, which are an indicator of quality and a source of income for the enterprise.

11. Interactive marketing management involves achieving a specific goal through the exchange of information between departments, employees, partners and customers, which increases the effectiveness of interactions. This type of marketing management actively uses various information and communication systems, responds actively and appropriately to signals from participants and offers management decision options. Accordingly, interactive marketing management functions in a system with three elements (people, machines and interactivity) to improve the performance of the enterprise.

12. Holistic marketing management – named after the concept of the same name developed by Philip Kotler. The main goal of this type of management is to form strong, long-term, mutually beneficial relationships with the company's key partners: customers, investors, suppliers, intermediaries, staff, etc. In other words, the main result of holistic marketing management is the creation of unique intangible assets in the form of a marketing business chain, where each partner supports the other and ensures an adequate level of profitability [189].

In today's business environment, all twelve types of marketing management are used according to the evolution of development. Each enterprise chooses the type of marketing management that best suits it in accordance with its individual characteristics and objectives. However, it should be noted that the last five types are more comprehensive, balanced and flexible in terms of introducing innovative approaches and adapting to changes in the internal or external environment of the enterprise [189].

The goal of marketing management is to ensure a level of quality management that will enable effective satisfaction of consumer needs through exchange and achieve the planned result [123].

The subject of marketing management can be defined as a system of production relations that directs the management of modern production towards satisfying consumer needs by creating a continuous manufacturer-consumer chain, each link of which contributes to increasing value for the end buyer. At the same time, a set of market production patterns, specific techniques, tools and methods are used to form the methodology of marketing management science and its logic. The object of marketing management is the volume and structure of demand [146].

The main goal of marketing management is to increase the profitability of the enterprise by achieving maximum satisfaction of consumer needs. The secondary objectives of marketing management are to conquer new markets, increase market share, enhance the competitiveness of the enterprise and its products, successfully introduce new products, improve customer service, increase efficiency, etc. [123].

Kovshova I. O. [190] describes the goals of marketing management in more detail, dividing them into 5 levels, which are shown in Fig. 1.1.

The principles of marketing management should be based on general management principles, taking into account the specifics of marketing. Shtefanich D. A. [151, 164] considers it appropriate to divide all principles of marketing management into two groups: organisational and supporting principles, thus distinguishing between organisational and resource components. Shtefanich D. A. [151] identifies the following principles of marketing management:

– organisational principles – unity of command; consistency; proper selection and placement of personnel; flexibility of organisational structures; guarantee of successful market activity of the enterprise; ensuring feedback; delegation of authority;

– Guiding principles – consistency; scientific justification of management decisions; focus of managers' activities on achieving specific marketing results; goal orientation; efficiency; optimality; planning in marketing management; comprehensiveness [151].

Ilchenko T. V. [134] highlights the following principles of marketing management in his research: consumer orientation; consumer influence; focus on the future; adaptability and flexibility; freedom of the consumer and producer; systematicity; comprehensiveness; economic efficiency; satisfaction of basic needs; limitation of potential damage; innovation; consumer education and information; consumer protection [134].

5 levels of marketing management objectives

First level. The dilemma of enterprise owners and hired managers regarding the achievement of a certain level of performance. Often, enterprise owners prefer to receive higher profits to be distributed among them in the form of dividends as a result of cost reduction. At the same time, hired senior managers try to justify additional expenses for modernisation and increasing the wage fund for employees in order to receive higher salaries or bonuses, ensure a better market position for the organisation and stability of its operations in a changing environment

Second level. The main objectives of marketing management need to be coordinated in accordance with partnership agreements, which often leads to their adjustment. The following opportunities or restrictions may be involved at this level: the introduction of certain quotas for product sales, the existence of a discount system for partners, etc.

Third level. The main objectives of marketing management are coordinated in accordance with customer requirements and desires. In general, commercial performance is achieved by increasing product sales and forming an optimal pricing policy for the enterprise

Fourth level. The main objectives of marketing management are combined with the objectives of the company's employees. Commercial performance at this level is achieved by establishing optimal personnel costs for work performed and the overall efficiency of employees, which is assessed qualitative and quantitative indicators

Fifth level. The main objectives of marketing management are adjusted in accordance with the requirements or expectations of the public

Fig. 1.1. 5 levels of marketing management goals*

Note. *Developed based on: [190]

Samokisha A. M. [180] and Kovshova I. O. [190] distinguish the following principles of marketing management: a scientific approach to the organisation of marketing management; timely and adequate response to market needs; social and ethical orientation towards consumers; a comprehensive approach to the organisation of marketing management; legality, honesty and decency in marketing management; competence in the organisation of marketing management; commercial effectiveness.

There is no consensus on the composition of marketing management principles. In each individual case, it is necessary to analyse all existing views and form a list of marketing management principles on a case-by-case basis for each individual enterprise. In general, marketing management principles assume that the achievement of an enterprise's goals depends on identifying the needs and demands of target markets, as well as on satisfying consumers more effectively than competitors.

Scientists [146] define the following basic approaches to the organisation of marketing management in an enterprise:

1. A process approach that views marketing management as a continuous network of interacting processes occurring within an enterprise.

2. A systematic approach that defines marketing management as a system of interrelated elements focused on achieving specific goals in a changing internal and external environment.

3. A situational approach, which views management as a living organism, where the choice of methods is determined by the specific situation and depends on a large number of internal and external factors of the enterprise.

4. A problem-oriented approach explains marketing management as a set of integral qualities, principles of goal setting and task setting, combining their content, organising the management process and evaluating performance [146].

The views of scientists on the main functions of marketing management in an enterprise are presented in Table 1.3.

The list of functions presented is quite complete, but there are many different views on the composition of marketing management functions. Some scholars reduce the number of functions in their research, believing that there is no need for excessive detail, while others, on the contrary, believe that the more we detail the functions of marketing management, the more thoroughly we will be able to understand its essence.

The views of scholars on the main tasks of marketing management are presented in Table 1.4.

Marketing management in an enterprise is so complex that it cannot be described by an exhaustive list of tasks. In addition, each enterprise is unique (with its own goals, available resources, unique organisational structure, proprietary system of processes, etc.), and the implementation of marketing management, accordingly, takes on a specific form with the creation of a unique set of specific tasks.

Table 1.3

Marketing management functions*

Author	Functions
V. O. Morokhova [170]	analysis; planning (including programming and forecasting); organisation; motivation; implementation; control
I. M. Komarnytskyi [147]	analysis; planning; implementation; control over the implementation of certain measures of the enterprise
A. V. Voychak [197]	identification of target markets for the enterprise, their capacity, and research into their conditions; research into the behaviour of target market participants (consumers, competitors, suppliers, etc.); forecasting the company's product sales; analysing the company and its ability to occupy a competitive position in a specific market; developing marketing strategies and tactics; creating specific marketing programmes for the company's activities; forming the company's product, pricing, communication and distribution policies; managing the company's product range and nomenclature; management of prices and communication processes of the enterprise; planning and management of distribution channels; organisation of product sales; organisation of collection and processing of marketing information; development of remuneration systems for marketing employees; creation and use of systems for monitoring the marketing activities of the enterprise.
D. A. Shtefanich [151], O. S. Borysenko [164]	marketing organisation; marketing forecasting and planning; motivation of employees engaged in marketing activities; operational accounting and operational regulation of marketing results, control and audit of marketing activities; analysis of marketing results
T. V. Ilchenko [134]	analysis; planning; development of strategic plans; development of marketing plans; implementation; execution of plans; control; quantitative determination of results; evaluation of results; corrective action
V. M. Kutsenko [153]	market analysis; planning; organisation; implementation; motivation; control and analysis of the implementation of marketing plans (measures)
Y. M. Petrovich [175]	analysis (diagnosis of the external and internal environment, market research, market conditions, research into the characteristics and behaviour of the company's target markets, service positioning); planning (forming a marketing strategy, forming marketing plans based on research, developing marketing programmes); organising (implementing established plans, forming an organisational marketing structure at the enterprise, developing specific tasks, determining powers and responsibilities for the implementation of marketing activities); motivation (development and implementation of material and moral incentives for staff, maintaining the corporate spirit of the organisation); marketing control (control over market research, implementation of marketing programmes, correction of identified errors, marketing audit).

Note. *Developed based on: [197, 134, 147, 153, 151, 164, 170, 175]

It should be noted that the above list is only a small part of the actual scope of marketing management tasks implemented in enterprises and demonstrates the complexity of establishing, organising, coordinating and executing each individual task according to specific processes in order to achieve the main goals.

Table 1.4

Marketing management tasks*

Author	Author's position
F. Kotler [35 , pp. 45–47]	Developing marketing strategies and plans; developing market knowledge; customer relations; creating a strong brand; creating a marketing proposition; delivering value; promoting value; ensuring long-term growth
V. O. Morokhova [170], O. S. Borysenko, A. V. Shevchenko, Yu. V. Fison, O. M. Krapk [164]	defining the company's mission, developing its goals and strategic directions, determining its place in the market as a whole and in individual segments; developing the company's strategy, identifying markets and positions that will ensure success; planning production, including product development, manufacturing, and after-sales service; developing a plan for purchasing material and technical resources; forming a production plan; planning and implementing a set of measures for developing marketing communications; identifying and forming product distribution channels; forming and implementing a pricing policy; planning financial support for production and sales; recruitment of personnel to implement planned measures formation or reform of the marketing organisational structure; development and implementation of a set of measures to improve the management of marketing activities; organisation of the collection, processing and analysis of marketing information
A. V. Voychak [197]	market research; planning; organisation; motivation; implementation; control
D. A. Shtefanich [36 , pp. 12–13]	market management; formation of a marketing information system; creation of a decision support system; management of a marketing complex; research of market participants' behaviour; implementation of marketing measures; organisational tasks
V. M. Kutsenko [38 , pp. 12–13]	creating a marketing information system at the enterprise; identifying the enterprise's target markets, their capacity and market conditions; researching the characteristics and behaviour of the subjects of the enterprise's target markets; forecasting the enterprise's product sales; analysing the enterprise's competitive capabilities, taking into account available resources; identifying (developing) marketing strategies (tactics); developing marketing programmes for the enterprise; forming the enterprise's product, pricing, distribution and communication policies; managing the development of products or services; managing pricing; managing the enterprise's distribution channels, organising effective sales of products; managing the enterprise's communication process; creating and applying a system for controlling the enterprise's marketing activities; developing and applying a system for managing sales personnel, etc.

Note: Developed based on: [153, 150, 151, 164, 170, 197]

Marketing management in an enterprise is implemented through specific procedures. The marketing management process in an enterprise should be viewed as a sequence of stages in the enterprise management system aimed at implementing marketing-based functions and principles, through which consumer needs are identified and satisfied and the enterprise's goals are achieved.

American scientist F. Kotler believes that the marketing management process consists of the following stages: analysis of market opportunities, selection of target markets, development of a marketing complex, practical implementation of marketing activities [150]. In turn, scientists [124, 197, 134, 153, 151, 164, 191, 174, 185] argue that the process of marketing management in an enterprise is formed by a larger number of procedures: analysis of the internal and external environment in which the enterprise operates; formation of a marketing information system; selection of target segments of the market environment; development of a marketing complex; organisation of a marketing planning system; construction of an organisational structure of the enterprise; formation and implementation of marketing programmes; provision of a marketing control system. Skrynkovsky R. M. [174] believes that the process of marketing management in an agricultural enterprise consists of the following stages: analysis of the opportunities and threats of enterprises in the agricultural market; selection of target segments, formation and development of a marketing strategy for agricultural enterprises; development of marketing tools, namely price, product, distribution and promotion; formation of a system of marketing measures, on the basis of which the actions of agricultural enterprises for a specific period of time are determined; implementation of a marketing programme taking into account marketing principles; control and continuous analysis of the marketing activities of agricultural enterprises [174].

Summarising the views of foreign and domestic scientists [124, 197, 134, 153, 150, 151, 164, 191, 174, 185], we consider it appropriate to highlight the following stages of the marketing management process in an enterprise, which are shown in Fig. 1.2.

The first stage of marketing management is the analysis of the internal and external environment, which involves assessing the financial condition of the enterprise; analysing the structure and segments of the market, which provides valuable information about customers, competitors, general trends and any unusual changes in the market that may be useful to the enterprise; the needs and desires of consumers that are not adequately met by competitors in the market [123].

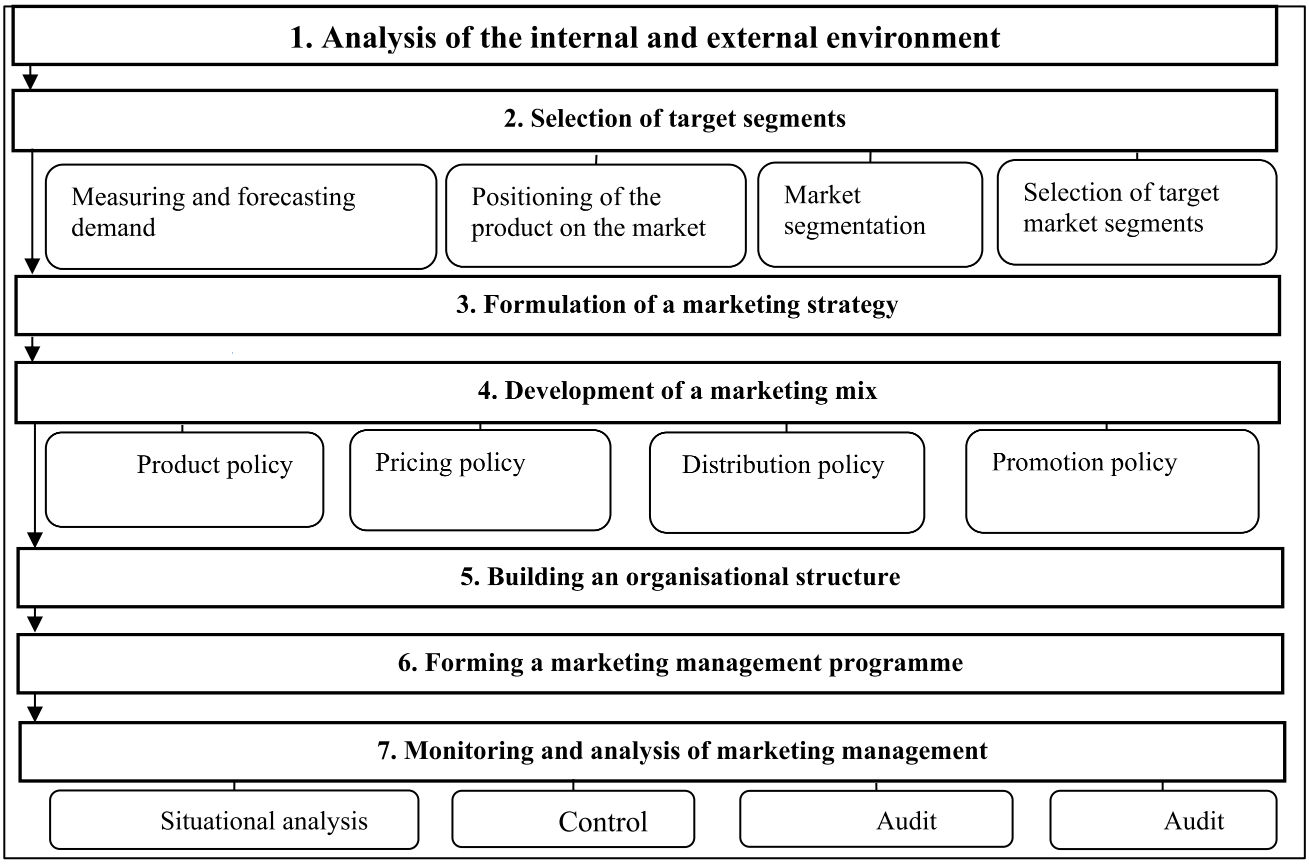

Fig. 1.2. The marketing management process in an enterprise*

Note. *Developed based on: [124, 197, 134, 153, 150, 151, 164, 191, 174, 185]

Modern science and practice have at their disposal a variety of techniques and methodologies that make it possible to assess the factors influencing the activities of an enterprise. When developing and implementing marketing management, it is necessary to constantly monitor and take into account changes in the composition of external factors and their impact on the competitiveness of the enterprise's products, namely, to detail their effect and clearly distinguish between market opportunities and threats. The interaction of internal and external factors is specific to the enterprise and almost always changes over time. Therefore, when choosing a strategic direction, it is necessary to assess the entire set of internal and external factors.

The second stage is the most important stage of the marketing management process, which allows you to select target market segments. The company conducts a thorough analysis of target markets in order to select potential buyers. The product market is quite large, and it is obvious that the company cannot satisfy the needs of the entire market, so it must divide the entire market into different segments and select the segment that best meets its goals [123].

In the segmentation process, it is important to select a target market, i.e. to find an attractive part of the market on which the company intends to focus its marketing efforts. A target market is a group of consumers whose needs best match the company's goals, resources and capabilities.

The decision on the choice of the target market is made based on an assessment of the attractiveness of market segments and the company's ability to operate in the market segment. The following factors are used to assess the attractiveness of a segment: market factors (size and growth potential of the segment, stage of the product life cycle, predictability of market development, price elasticity, cyclicality and seasonality of demand, etc.); competitive (intensity and nature of competition, possibility of new competitors and competition from substitute products, degree of current product differentiation); macroenvironmental factors (economic processes, political and legal factors, degree of market regulation, social, natural and technological factors); other factors affecting the current and potential strengths of the enterprise in serving the target market [151].

Forming the image of an enterprise's goods or services in a selected market segment requires positioning them. Positioning is the process of creating a market image for a product based on identified consumer motivations in order to form a unique perception of the product in the minds of target consumers, distinct from competitors' products. Making decisions about product positioning is one of the most difficult parts of the process of forming a company's market strategy.

The third stage involves the formation of a marketing strategy, which depends on the position that the company occupies in the target market, the dynamics of its own development, the behaviour of competitors, and the specifics of the products manufactured or services provided [123].

In the current conditions of the Ukrainian economy, every enterprise tries not only to maximise profits, but also to promote effective marketing activities. Therefore, it is important to choose a marketing strategy for the enterprise that meets all the requirements of the enterprise itself, ensures effective and profitable operation, generates profits and contributes to the further development of the enterprise. A competent, well-founded decision on the choice of strategy will help the enterprise survive in an unfavourable external environment.

Balabanova L. V. [118] considers "marketing strategy as the main focus of efforts, the philosophy of a company's business in the context of marketing organisation. Marketing strategies should guide the company towards maximum and timely adaptation of its activities to the dynamic marketing environment in order to achieve its strategic goals."

The marketing strategy of an enterprise is the most important functional strategy, as it provides justification for the market orientation of the enterprise. This strategy has two main guidelines: the market and the product. The relationship between these components allows enterprises to fill the "strategic gap" with both "old" products that will be sold in new markets and new products planned for sale in "old", i.e. established, markets.

Thus, there are many classifications of marketing strategies today, one of which is shown in Fig. 1.3. The success of an enterprise in the market largely depends on the choice of the optimal marketing strategy. This will help reduce the degree of uncertainty and risk in marketing activities and ensure the concentration of resources on selected priority areas. Therefore, choosing a strategy means choosing the means by which the company will solve the tasks set before it. This choice is complicated by the multiplicity of strategies and the complexity of determining which strategy is appropriate for the company to choose at one of the stages of its economic activity.

The fourth stage covers the development of a marketing mix and the effective selection of a set of marketing tools and actions. The company develops an effective marketing mix in such a way that the appropriate combination of marketing tools is effectively selected and coordinated into a useful programme to ensure that the set goals are achieved [123].

CLASSIFICATION OF MARKETING STRATEGIES

Depending on the term of their implementation:
- short-term;
- medium-term;
- long-term

Depending on the product life cycle strategy:
- marketing strategies at the stage of product introduction to the market;
- marketing strategies at the growth stage;
- marketing strategies at the market saturation stage;
- marketing strategies at the decline stage

Depending on market demand:
- promotional marketing strategy;
- synchronous marketing strategy;
- support marketing strategy;
- remarketing strategy;
- demarketing strategy

Depending on the overall economic condition of enterprises and their marketing directions:
- survival strategy;
- stabilisation strategy;
- growth strategy

By elements of the marketing mix:
- product strategy;
- pricing strategy;
- product movement strategy;
- promotion strategy

By competitive advantage (according to Porter):
- price leadership strategy;
- differentiation strategy;
- focus (concentration) strategy

Depending on the competitive position of the enterprise and its marketing orientation:
- market leader strategy;
- challenger strategy;
- follower strategy;
- market niche strategy.

Depending on the type of differentiation:
- product differentiation;
- service differentiation;
- image differentiation;
- personnel differentiation

Depending on the ratio of the relative market share of the enterprise and the growth rate of its sales market (according to the BCG matrix) or depending on the competitiveness of the SGP and the attractiveness of its sales market (according to the General Electric):
- development strategy;
- maintenance strategy;
- harvest strategy;
- elimination strategy

Depending on the method of selecting the target market:
- product specialisation strategy;
- segment specialisation;
- single-segment concentration;
- selective specialisation;
- full coverage strategy.

Depending on the degree of segmentation of the company's sales markets:
- undifferentiated (aggregated) marketing strategy;
- differentiated marketing strategy;
- concentrated marketing

Fig. 1.3. Classification of marketing strategies*

Note. *Developed based on: [118 , 160]

In 1964, Jerry McCarthy proposed the "4P" model, i.e. a marketing mix consisting of only four elements: product, price, place (distribution) and promotion. A marketing mix is a set of marketing tools, the specific structure of which ensures the achievement of the set goal and the solution of marketing tasks [142].

Important elements of marketing activities include the development and implementation of the company's product policy, the selection of the product range, and the expansion of the production nomenclature. The market offers a wide variety of products, which is a positive factor in satisfying customer demand. At the same time, manufacturers need to pay special attention to product quality [131].

Price is the most important element of the marketing mix. To choose a pricing strategy, a company must identify and analyse all factors that may affect the price. The marketing goals and costs of a company are only approximate guidelines for determining the final price of a product [131].

In a market economy, one of the most important tasks facing commodity producers is to develop an effective distribution policy that takes into account market conditions, high levels of competition and intermediary structures. Along with the diversification of sales channels, an urgent task for commodity producers is to expand their product markets. In the economic practice of many developed countries, new methods and technologies for the supply and distribution of goods based on the concept of logistics are already widely used. The use of logistics in an enterprise will contribute to the operational implementation of logistics planning, analysis and management of the enterprise, and ensure the integration of the enterprise with the market [131].

Promotion as a component of an enterprise's marketing mix is usually considered as a communication policy, where the main elements are identified, such as advertising, sales promotion, public relations and personal selling, which are designed to disseminate information about the product and shape the necessary image of both the product and the manufacturer [176].

Each of the marketing mix tools must be used in conjunction with other tools, because their properties, when influencing the consumer separately, are lost, but together they help companies to respond quickly to changes in the market situation.

The fifth stage involves building the organisational structure of the enterprise, which is largely determined by the chosen strategy and objectives, the size of the enterprise's resources, and the specifics of its products and markets [123]. The complexity of building an organisational structure for marketing management in an enterprise lies in the fact that all structural units operate on the basis of marketing principles.

The sixth stage involves the development of a marketing management programme based on comprehensive marketing research and the results of an assessment of the company's own capabilities, which optimally combines marketing tools, taking into account the specific period of the plan's implementation and the corresponding financial support [123].

In marketing management, special attention is paid to the process of developing marketing programmes, because without the right approach to their design and implementation, it is difficult for managers to organise effective work in the market and achieve their goals.

Essentially, any marketing programme should specify the marketing strategy, tactical and operational marketing plans in the enterprise. After all, without its competent formation, there will be no effective planning and implementation of the defined strategies. In addition, the marketing programme should primarily be aimed at satisfying the needs of buyers. All tasks and objectives of the marketing programme must be developed with a focus on the consumer and specific target markets.

A marketing programme is usually developed on the basis of marketing research, which indicates to the company the correct course of action in the market. Such research includes studying consumer behaviour and specific tastes, researching market conditions, goods, prices and pricing strategies, competitors, suppliers, intermediaries, main methods and forms of sales, and various communication tools.

The seventh stage involves the control and analysis of marketing management, which involves monitoring the measures necessary to achieve the company's goals [123]. Marketing control is focused on the timely and adequate identification of existing problems and deviations, as well as the appropriate timely adjustment of the enterprise's activities as a whole in order to effectively solve and eliminate problems and deviations from the plan. As a result, a plan of measures is developed to improve the effectiveness of the enterprise's marketing management system.

If marketing management is not effective, an audit is conducted. A marketing audit is a comprehensive periodic review of the external marketing environment, goals, strategies, and specific types of marketing activities to identify problems and hidden potential of the enterprise. It is based on general auditing principles aimed at identifying lost benefits from the misuse of marketing in the enterprise [164].

In addition, marketing control in an enterprise completes the marketing management process cycle. It identifies the strengths and weaknesses of marketing activities and analyses the level of implementation of marketing plans, which are necessary for the correct selection of marketing goals and strategies for the next planning period.

Thus, , having systematised the views of scientists on approaches to the concept of marketing management, we propose interpreting marketing management as marketing-based enterprise management aimed at adapting it to changes in the external environment and optimally using available resources to achieve the set goals and objectives of the enterprise, taking into account the satisfaction of consumer needs. The process of marketing management in an enterprise includes a number of specific procedures aimed at studying and shaping the demand of target consumers and comprehensively satisfying their needs.

6.2 The essence and significance of the marketing management system of enterprises

In today's environment, the performance of enterprises largely depends on the influence of an extremely complex, dynamic and uncertain external environment. Only those economic entities that are able to adapt to the external environment, take timely preventive measures against the negative impact of its factors and fully utilise the opportunities it provides can ensure the competitiveness and profitability of their activities in the long term [123]. Therefore, in this regard, special attention should be paid to the formation of a comprehensive, scientifically based enterprise management system.

Today, there are many approaches to defining the concept of a "system." Kustovskaya O. V. considers a system as a way of solving a specific problem, i.e., as a set of all necessary knowledge, information, material resources and methods of their use, and the organisation of human activities aimed at solving the problem. Zavadsky Y. S. defines a system as an internally organised set of interrelated and interacting elements that form a single whole and work together to achieve a set goal [202]. According to Khomyakov V. I., a system is a certain integrity consisting of interdependent parts, each of which contributes to the characteristics of the whole [185].

Kholod B. I. and Zborovska O. M., analysing the definition of the concept of "system" and taking into account a number of other features, note that the most essential features of a system are as follows: a) the presence of different elements that make up the system; b) the presence of interrelationships between the elements of the system; c) the presence of a goal, which is the beginning of the system, connecting and determining the interaction of elements. Thus, we understand a system to be a set of interrelated and at the same time different elements, created to achieve a specific goal [184].

Scientists [155] note that a system has a certain structure, i.e. an internal order. The structure of the system is determined by the goals of the system's existence. It consists of components between which there are connections that determine hierarchical relationships and ensure interaction between these components. The smallest indivisible component of the system is called an element [155].

The systems approach is based on the use of systems theory in management since the late 1950s. According to this approach, all organisations (management objects) are systems consisting of the following elements: structure, tasks, technology, people, goals, and resources. There are closed systems (with fixed, rigid conditions that do not depend on the environment) and open systems (which interact with the external environment). A significant contribution to the development of the systems approach in management belongs to C. Bernard (who viewed the organisation as a social system), P. Drucker (the exclusive role of managerial professionalism, the great importance of self-management, organisational focus, etc.), and the authors of the McKinsey "7-S" model [193].

In scientific literature, the concept of a "systemic approach" is interpreted quite broadly and ambiguously. Thus, Guryanov A. B. [135] believes that a systematic approach is a methodology for studying objects as systems. In this case, the system contains two components: 1) the external environment, which consists of the input, output of the system, communication with the external environment, and feedback; 2) the internal structure, which is a set of interconnected components that ensure the process of the management subject's influence on the object, the processing of input into output, and the achievement of the system's goals. Kustovskaya O. V. defines the systematic approach as one of the main directions of the methodology of special scientific knowledge and social practice, the purpose and objectives of which are to study certain objects as complex systems [135].

The methodology of the systemic approach has found application in many areas of science and production, and one of the most striking examples is the application of the systemic approach in enterprise management. Didur K. M. [130] considers the systems approach to management as a set of generally accepted management principles – a way of thinking about organisation and management in an unstable external environment. As a management method, the systematic approach is based on understanding the object of management as a whole, on identifying the diversity of its internal and external connections; a set of related, coordinated methods and means of managing the economy, industry, enterprise, or division [130].

Today, there are a significant number of approaches to interpreting the essence of the concept of "enterprise management system". Kalyuzhna N. G. [135 , p. 53] considers the enterprise management system as the embodiment of organisational experience, the form of manifestation of which is the organisational relations between its elements, namely between the subject and object of management. A similar opinion is held by F. I. Khmil, who defines a management system as a way of combining and interacting between two subsystems – the managing and managed (subject and object of management) [143]. Kuznetsova G. Yu. notes that the enterprise management system consists of the following management subsystems: information and communication technologies, strategic planning and development, marketing, functional, motivational, and controlling. Monastyrsky G. L. [133, p. 159] in his research considers the enterprise management system as a set of all enterprise services, all subsystems and communications between them, as well as processes that ensure the functioning of the enterprise.

As noted by scientists [201, 144, 130], the management system forms a management cycle that is consistently implemented and completed. In this case, the enterprise is modelled as an open system with inputs and outputs and consists of a controlling and controlled subsystem, which interact closely because they are organically interrelated. The controlling subsystem consists of elements that ensure the management process, while the controlled subsystem consists of elements that ensure the direct process of production, economic, commercial and other types of activities.

One of the most important contributions to management systems theory was the recognition of marketing as one of the most important management functions and, subsequently, the formation of a separate system, namely marketing. Balabanova L. V., V. V. Kholod and I. V. Balabanova [119] consider the marketing system in a broad and narrow sense. In a broad sense, it is a system of economic relations that arise in the process of production and sale of goods oriented towards the market and the consumer. In a narrow sense, the marketing system is a complex of marketing functions, elements, and techniques carried out by all participants in the production and sale of goods. In their research, scientists [183] consider the marketing system through the combination of the marketing complex with the marketing management system. The essence of such a marketing system lies in combining elements of the marketing mix and the marketing management system to respond quickly to changes in the market environment.

The marketing system of an enterprise is an internally organised set of interrelated components (economic, social, organisational, technical and technological) in relation to the external environment, the integral unity of which ensures, on the one hand, the satisfaction of consumer needs and, on the other hand, the achievement of the goals set by the economic entity. This is realistic provided that the system of marketing information subsystems, the marketing complex and marketing management function in a targeted and effective manner.

Today, there is no clearly defined marketing management system in scientific works. As noted by scientists [196], the formation of a marketing management system for an enterprise is a complex process of building a management system based on marketing principles and using management functions.

In our opinion, a marketing management system should be viewed as an integrated set of management and marketing elements that create a positive synergistic effect for management decision-making. Summarising the findings of researchers [119,144,130], we believe that the marketing management system can be represented as shown in Fig. 1.4.

As in the management system, the main elements of the enterprise's marketing management system are the subject (controlling subsystem) and object (controlled subsystem) of management, which function on the basis of marketing. The influence of the subject (managers, owners, specialists who carry out management activities within their competences) on the object of management (components of the enterprise's operating environment) is exercised through the implementation of management decisions based on marketing, which are aimed at satisfying consumer needs.

Based on Fig. 1.4, the marketing management system of enterprises can be described as an integrated set of management and marketing elements that create a positive synergistic effect for management decision-making. In the process of forming a marketing management system for an enterprise, it is necessary to take into account external and internal environmental factors that influence the construction of a more or less complex marketing management system in the enterprise.

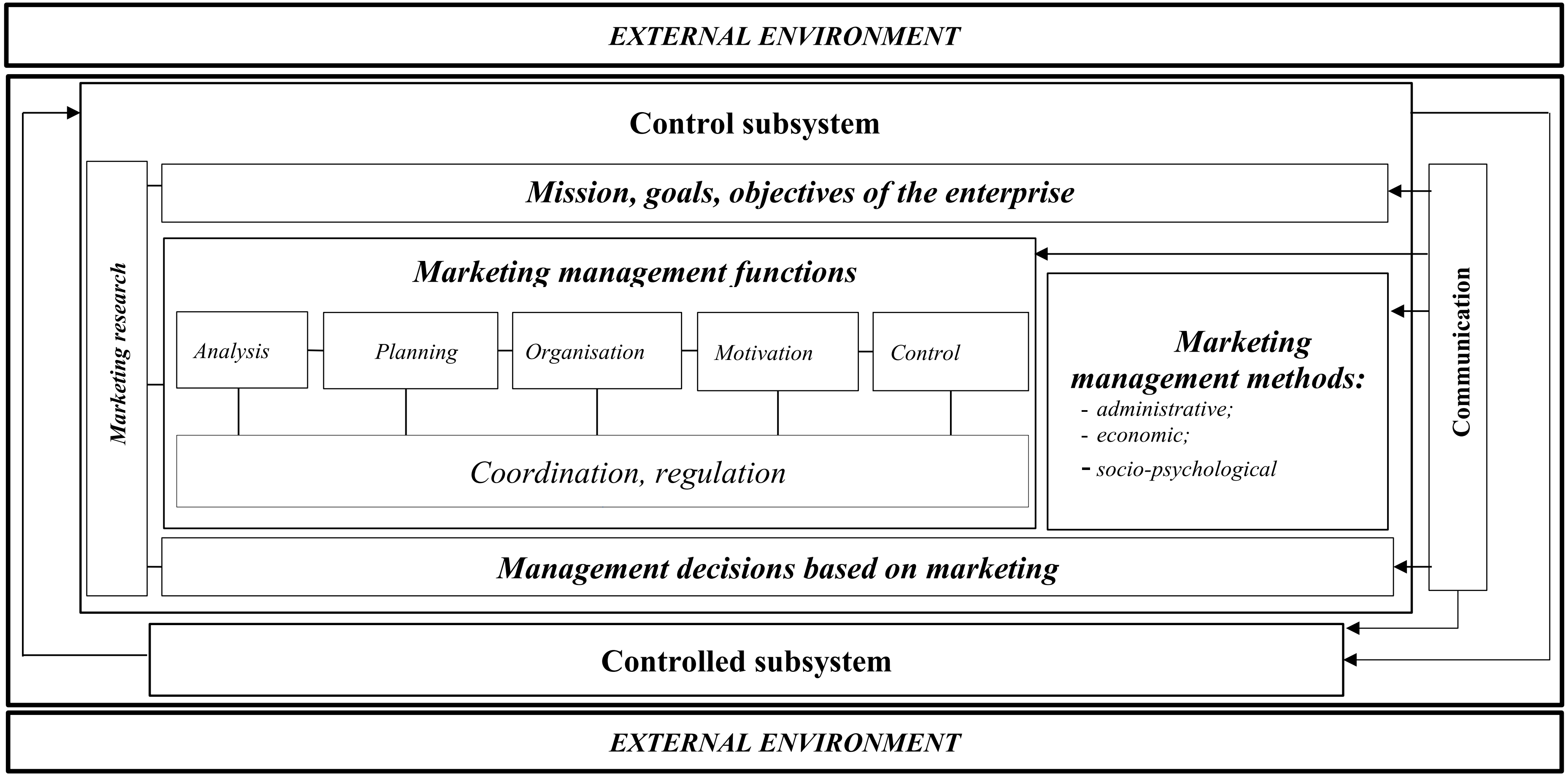

Fig. 1.4. Marketing management system in an enterprise*

Note. *Developed based on: [119,144,130]

If marketing-based management decisions in the controlled subsystem do not work well enough (are not implemented, are implemented partially, are implemented with deviations, etc.), then information about all inaccuracies, shortcomings, and deviations is sent through feedback channels to the control subsystem (i.e., a regulation procedure is performed), where the management apparatus develops the necessary measures. Marketing-based management decisions are sent through direct communication channels to the controlled subsystem and are aimed at eliminating shortcomings, deviations, etc. In fact, a cyclical mechanism is ensured, as a result of which (if necessary, in several cycles) all shortcomings will be eliminated, and the controlled subsystem, under the influence of the management, will eliminate existing problems. If the control subsystem does not work professionally, competently, effectively or actively enough, then it should be expected that the controlled subsystem will not ensure the fulfilment of the tasks set and the achievement of the established goals of marketing management. The level of fulfilment of the tasks set by the controlled subsystem and the achievement of the established marketing management goals in the enterprise is directly dependent on the activities of the controlling subsystem (management apparatus).

6.3 Methodological approaches to evaluating marketing management in enterprises

Today, there is no universal approach to evaluating marketing management in enterprises in information sources. To improve the efficiency of an enterprise, it is necessary to constantly evaluate and improve the factors on which it depends. One such factor is management, which in a certain way determines both the economic results of the enterprise's activities and the results that are of interest to the staff, government authorities and the population of the country. That is why various approaches have been used for a long time to assess the state of management and the possibilities for its improvement [189, p. 97].

At the same time, it is necessary to distinguish between the concepts of "management effectiveness" and "management efficiency." Researchers in management theory clearly distinguish between these concepts. Thus, P. Drucker believes that effectiveness is the result of doing the right things, while efficiency is the result of doing those things correctly [130]. Management effectiveness implies that the set goals correspond to the final results of the activity. By management effectiveness, the scientist means the degree of management accuracy, which is characterised by the achievement of the expected state of the management object, the management goal or the level of approximation to it [194]. Measuring the effectiveness of organisation management makes it possible to identify opportunities and functional directions for the development of the enterprise, as well as provides information about the need to create new demand and, accordingly, release new products, about diversification, and problems of interaction between participants in the production and management process [126, p. 227].

The efficiency of an enterprise's activities as an economic category reflects the correspondence of the actual result to the desired one. In other words, it is the level of achievement of the organisation's goals and its ability to function in a competitive environment. Efficiency in this sense is used to justify economic decisions and various analytical assessments [129, p. 453].

Markina I. A., O. M. Taran-Lala, V. P. Yakhnytska [167] note in their research that in order to assess the effectiveness of enterprise management in a strategic perspective, it is advisable to examine the level of internal stability of the enterprise, identifying the following four interrelated components of equal importance:

– Economic stability is a state of an enterprise characterised by optimal distribution of equity capital, calendar distribution of incoming and outgoing financial flows, and reliable risk management methods that ensure the liquidity and solvency of the economic entity in the current and long-term perspective. Within the framework of economic stability, the dominant factors are: financial stability, market stability, organisational stability, production stability, technical and technological stability, and investment stability.

– social stability, which shows the degree of social security of the enterprise's personnel. Social stability is characterised by the effectiveness of the organisational structure, management, social policy of the enterprise and the personnel motivation system, communication between different management links and the internal psychological climate, and also covers socio-psychological and communication stability;

– Environmental sustainability – the interconnection between the enterprise's economy and its environmental safety, minimising the harmful impact of the enterprise's production and economic activities on the environment. Environmental safety is characterised by the following indicators: the resource-saving technology coefficient, the environmental pollution coefficient, and others;

– Environmental sustainability – the interconnection between a company's economy and its environmental safety, minimising the harmful impact of the company's production and economic activities on the environment [167].

Yevas T. V., Kolomiets A. M. [132] note that in theory and practice, five most common approaches to assessing management effectiveness have been developed (Table 1.5).

Table 1.5

Approaches to assessing management effectiveness *

Name of approach	Content
Target	Based on the fact that the main goal of any management system is for the organisation to achieve its core objectives in the most rational (economical) way
Functional	Allows you to determine the effectiveness of management in terms of the organisation of work and the functioning of management personnel, i.e. it is based on the results and costs of the management system itself
Compositional	Aims to determine the degree of influence of management work on the results of the organisation's activities as a whole (profit growth, sales volumes, labour productivity, cost reduction, etc.)
Behavioural	Based on measuring the degree of satisfaction of the needs of all groups (consumers, suppliers, shareholders, the state, internal divisions of the enterprise, its employees, etc.) interested in the resultsof the organisation's
Integral	Based on the construction of a synthetic (integral) indicator that covers several partial indicators of management effectiveness
Level	Distinguishes three levels of effectiveness in the assessment process: individual, group, organisational – and the corresponding factors that influence them

Note: Developed based on: [132].

Pashchenko O. P., Vaskivsky O. P., Kulish N. [177] propose to evaluate the effectiveness of enterprise management by areas of activity, based on the main potentials of the enterprise's functioning (Table 1.6).

Table 1.6

Areas of assessment of enterprise management effectiveness*

No	Component of enterprise potential	Areas for assessing the effectiveness of enterprise management
1	Production	Efficiency of use of means of labour; efficiency of use of production equipment, efficiency of production technology, efficiency of use of work in progress, efficiency of warehouse inventory management, efficiency of MTZ management, efficiency of production rhythm and uniformity, efficiency of production capacity, effectiveness of operational and calendar planning, effectiveness of strategic and operational production control
2.	Labour	The effectiveness of creating a favourable moral and psychological climate, the efficiency of the management apparatus, the efficiency of a cohesive work team, the efficiency of communication processes, the efficiency of labour utilisation, the effectiveness of operational personnel control, and the effectiveness of strategic personnel control
3.	Organisational	Effectiveness of innovative projects, effectiveness of investment projects, effectiveness of commercial projects, effectiveness of implemented business plans, effectiveness of implemented enterprise development projects, effectiveness of operational control, effectiveness of strategic control
4	Financial	Budgeting efficiency, liquidity efficiency, financial stability efficiency, business activity efficiency, efficiency of assets and liabilities utilisation, efficiency of own and borrowed capital, effectiveness of operational activities, effectiveness of operational financial control, effectiveness of strategic financial control
5.	Market	Competitiveness efficiency, product supply and demand efficiency, marketing research efficiency, marketing communications efficiency, product policy analysis, distribution policy analysis, operational marketing control effectiveness, product sales analysis, strategic marketing control effectiveness, effectiveness of strategic marketing control, analysis of pricing policy

Note. *Source: [177]

Scientists [137, 130, 155, 143] note that when evaluating management in an organisation, a distinction should be made between economic, organisational and social efficiency. Economic efficiency of management reflects the economic results of an organisation's activities under a specific management system. On the one hand, economic efficiency is characterised by indicators that reflect the structure and functioning of management systems. At the same time, management efficiency is characterised by indicators that reflect the results of the organisation's production and economic activities, as shown in Table 1.7.

Table 1.7

Indicators for assessing the economic efficiency of management*

General	Partial		
	labour efficiency	improvement in the efficiency of fixed assets, working capital and capital investments	improvement in the efficiency of material resources use
Growth in production volume in value terms Production per 1 hryvnia of expenditure Relative savings in fixed production assets, material costs, and labour costs Cost price Profitability Profit	Growth rates of labour productivity Share of production increase due to labour productivity growth Savings in the number of employees Reduction in labour intensity of production	Return on assets – production of goods per 1 hryvnia of the average annual value of fixed production assets Production per 1 hryvnia of average annual working capital Increase in working capital relative to the increase in marketable products Ratio of profit growth to capital investments that caused it Specific capital investments per unit of new production capacity, per 1 hryvnia of production growth Payback period for capital investments – their ratio to the amount of profit growth	Material costs per 1 UAH of marketable output Consumption of important material resources in kind per 1 hryvnia of commercial output Ratio of the growth rate of material costs to the growth rate of commercial products

Note: Source: [130, 155]

These include, in particular, profit, cost price, volume of manufactured products, volume of sales, profitability, capital intensity, liquidity level, risk level, autonomy, financial stability, manoeuvrability, turnover ratios, etc.

Organisational management effectiveness characterises the quality of an organisation's structure, its management system, management decision-making, and the management system's response to stress, conflicts, organisational changes, etc. It is assessed using indicators that reflect the quality of the organisation's structure and its management system. These indicators include the level of centralisation of management functions, the ratio of management personnel between different levels of management, the proportion of managers in the total number of management staff, the link ratio of the management structure, and the speed of management decision-making.

The social effectiveness of management reflects the impact of management on the processes of shaping the professional characteristics of employees, particularly managers, forming a corporate spirit, a corresponding psychological climate in the team, an atmosphere of security and involvement in the organisation's goals, prospects for the development of social institutions, etc. The social effectiveness of management can be assessed from two perspectives. On the one hand, it is assessed using indicators that reflect the socio-cultural sphere of the organisation's functioning, including the level of labour discipline, the level of staff stability, the level of development of social infrastructure at the enterprise, the level of working conditions, the level of workplace organisation, etc. On the other hand, it is assessed based on indicators that reflect the impact on the achievement of production results and the satisfaction of market needs; these include, in particular, labour productivity, wage returns, the level of consumer satisfaction, etc.

Therefore, depending on the nature of the process of assessing the effectiveness of enterprise management, the object of assessment may be: management in general (system, organisation, methods), management structure, level of management labour utilisation, effectiveness of structural units, etc. Management and its effectiveness depend on the characteristics of the industry (production), technical equipment (availability of tools and equipment), types and types of technological processes, scale, level of production specialisation, type of products, and staff qualifications.

Marketing diagnostics is a set of techniques and methods that can be used to assess the effectiveness of management decisions and, in the early stages of marketing, to identify deviations from predefined parameters. The main methods for diagnosing the effectiveness of marketing activities usually include: monitoring the external environment; characterising the current state of marketing organisation within the enterprise; assessing the degree of information availability; evaluating the likelihood of changes in the economic entity's position in the market, etc.

Kotler F. and Keller K. [150] substantiated an approach that involves assessing the effectiveness of marketing activities in relation to the external and internal environment of the enterprise. However, there are problems with the practical application of this methodology [150]. Pavlenko A. F. and Voichak A. V. [160] believe that the effectiveness of marketing activities can be calculated through a system of indicators of income and profit, solvency, inventory turnover and the effectiveness of marketing measures [160].

Dudiak R., Bilskyi I. and Bugil S. [131] propose to evaluate the marketing activities of enterprises by studying product, pricing, sales and communication policies, as shown in Fig. 1.5.

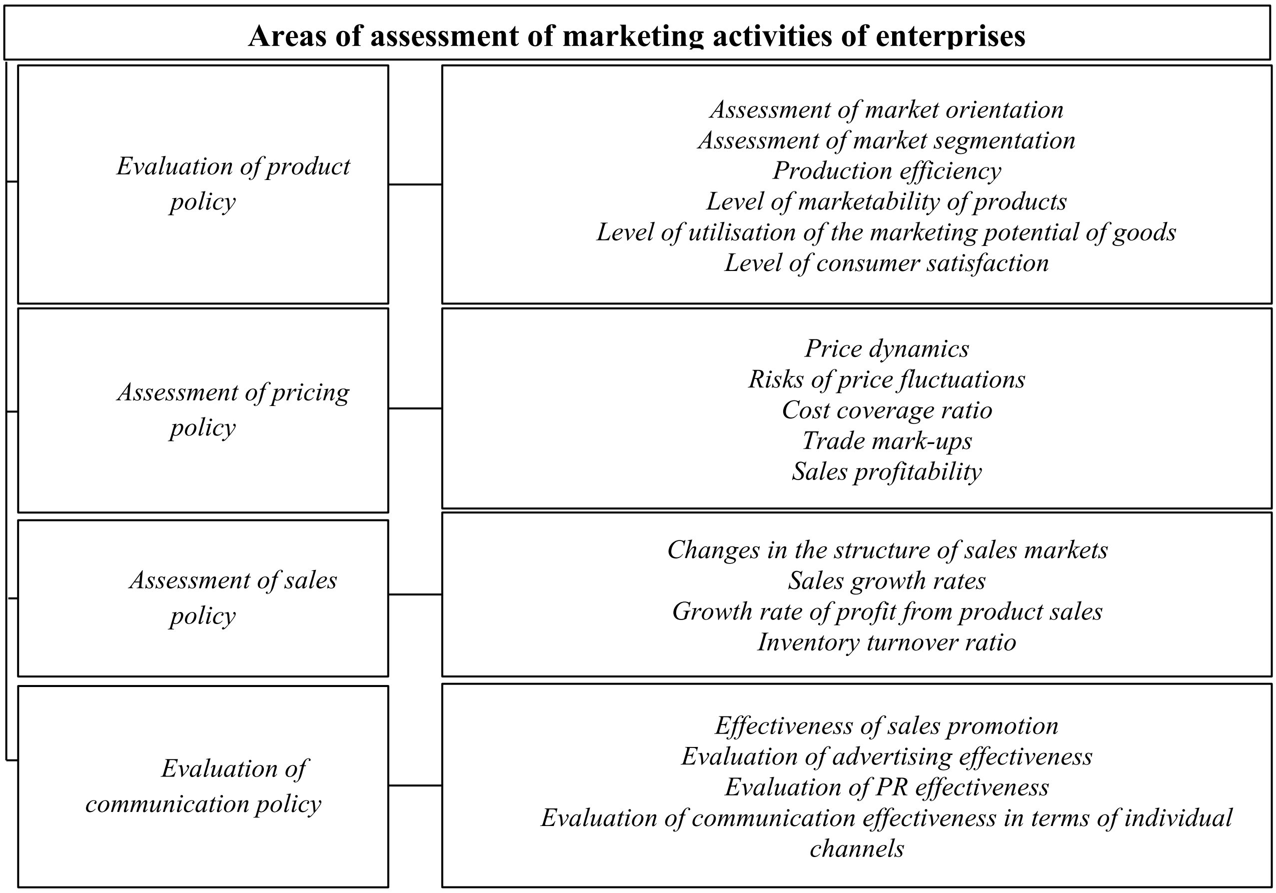

Fig. 1.5. Areas of assessment of marketing activities of enterprises*

Note: *Developed based on: [131]

The results of enterprises' activities and management decisions depend largely on the level of marketing development and the implementation of marketing tools in their activities. Decisions on the production of new products, expansion of the product range, setting prices for goods, developing a system of price discounts, optimising distribution channels, and communicating information about goods or services to consumers are all achieved through effective marketing. Making the right management decisions is impossible without knowledge of the market, the needs of potential consumers, information about competitors and suppliers, and effective means of communication with the target audience.

According to V. K. Gorkavy, ensuring effective marketing activities requires systematic and consistent diagnosis of marketing problems at the enterprise and their connection with the parameters of the enterprise's external environment. Diagnosing marketing activities requires the use of traditional statistical research methods, such as observation, analytical grouping, dynamic series, indices, etc., and methods for measuring multidimensional relationships – correlation-regression, dispersion, cluster analysis and mathematical modelling. The use of the above methods for evaluating the effectiveness of marketing activities will ensure the rationality of management decisions and allow for a more complete consideration of the influence of individual factors on the effectiveness of marketing activities [128].

Scientists [182] distinguish four groups of methods for evaluating the effectiveness of marketing activities:

– quantitative, which involve comparing the performance indicators of marketing activities with the costs of their implementation (return on investment in marketing; brand valuation; assessment of the market success of an enterprise in the competitive environment);

– sociological, which are aimed at using the tools of applied sociology, namely: the development of sociological studies and conducting research in accordance with these programmes;

– expert (subjective), which involve the use of special knowledge and practical experience of experts to obtain general judgements about the effectiveness of the enterprise's marketing activities, mainly in the form of assessments (scores). Before conducting the examination, experts must be provided with factual information about the enterprise and the marketing environment, its functioning; several rounds of examination may be conducted in order to clarify expert assessments and explain the experts' motivations;

– qualitative methods based on marketing audits – comprehensive, systematic, independent and periodic checks of the external marketing environment. In this case, two areas of marketing control can be distinguished: results-oriented marketing control and marketing audit, i.e. analysis of the qualitative aspects of an organisation's activities [182].

Therefore, conducting a balanced and objective assessment of marketing activities is significantly complicated by the ambiguity of approaches and the lack of a single algorithm for performing such analysis and calculating coefficients. The methodology for analysing marketing activities includes quantitative and qualitative methods, which complement each other in the research process and are reinforced by expert and sociological assessments. This group of methods includes marketing audits of enterprises, identification of strengths and weaknesses, opportunities and threats to activities, conducting marketing research using focus groups, in-depth interviews, expert questionnaires, and others. Qualitative research methods are carried out using sociological methods and assessment techniques that confirm or refute the effectiveness of marketing policy based on information obtained directly from consumers.

Scientists [151, 164] note that marketing management methods are divided into the following:

– economic methods: methods of direct economic influence: marketing planning, marketing programmes, internal economic regulators, methods of indirect economic regulation: taxes, benefits, credit terms, sanctions, prices, local taxes and fees, etc.;

– organisational and administrative methods: orders, resolutions, directives, regulations, standards, instructions, etc.;

– social methods: social forecasting, which makes it possible to identify social problems in the marketing service and ways to solve them; social planning, which consists in developing specific measures to improve the quality of life of employees, career advancement of officials, labour force planning, etc.; social regulation. The range of its means is quite wide. These include collective agreements, internal regulations, contracts, rules of etiquette, etc.; social standardisation, represented by various norms that determine the behaviour of employees (legal norms, norms defined by public organisations, moral norms).

Summarising the views of foreign and Ukrainian scholars [128, 130, 131, 150, 167, 151, 164, 155, 160, 182, 143, 130] on assessing the effectiveness of management and marketing activities, we consider it appropriate to propose a model for assessing the marketing management of an enterprise, which is shown in Fig. 1.6.

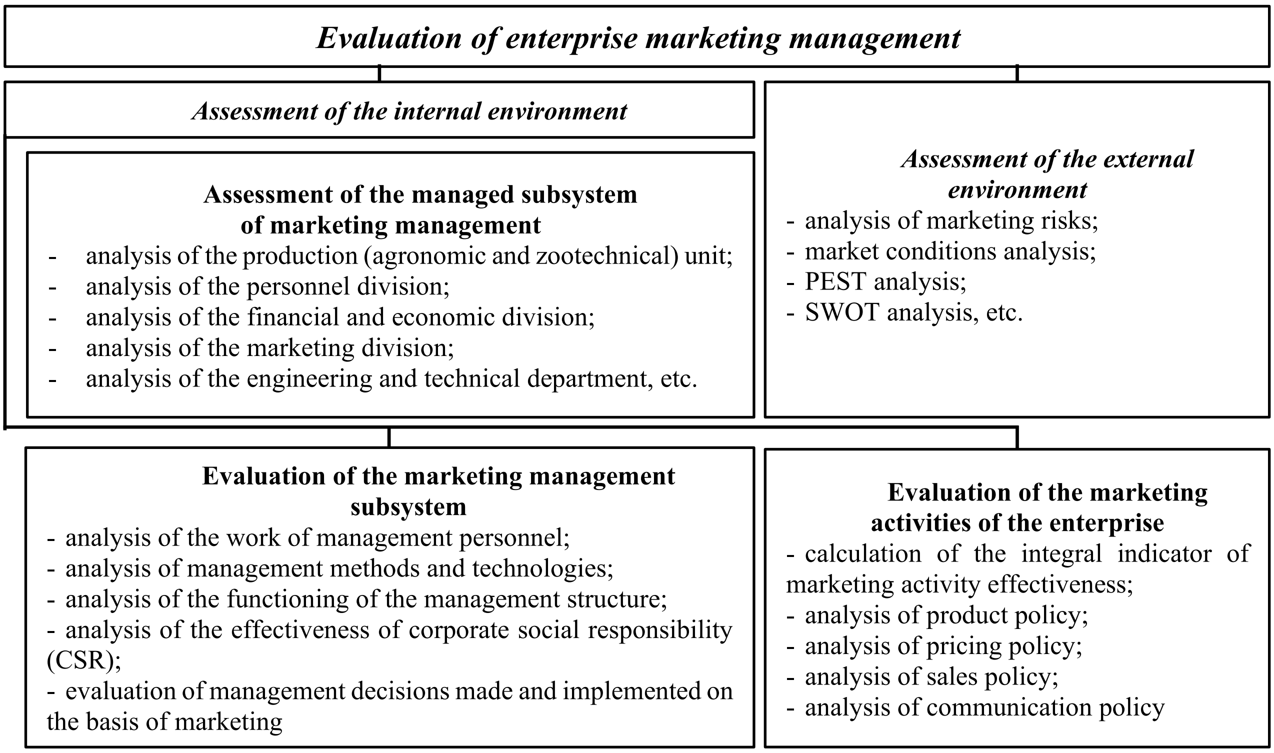

Fig. 1.6. Components of marketing management assessment of an enterprise*

Note. *Developed by the author

Thus, the assessment of an enterprise's marketing management must be based on an analysis of its internal and external environment, with the assessment of the internal environment being based on an analysis of the controlled and controlling management system, as well as the marketing activities of the entire enterprise.

6.4 Use of digitalisation tools in the marketing management system of agricultural enterprises

Scientists [193] note that today, as a result of innovative technological developments, global agriculture is at stage 4.0 ("Agriculture 4.0") and is focused on the use of environmentally friendly natural resources, advanced innovative technologies for smart, precision farming, including genetic modification, nanobiotechnology, soilless plant cultivation and vertical farming, as well as complex technological systems such as satellite navigation, robots, unmanned aerial vehicles/drones, 3D food printing, the Internet of Things, and blockchain. These global technologies will enable agricultural enterprises to be more profitable, efficient, safe, and environmentally friendly, and focused on improving the efficiency of management and implementation of agricultural processes throughout the value chain, reducing risks and limiting vulnerability to external influences (from technical breakdowns to bad weather, droughts, diseases, etc.), the formation of agricultural ecosystems, including integrated networks that combine digital data obtained in real time from both internal sources (farm sensor readings) and external sources (provided by other ecosystem participants), to make effective management decisions, as well as bringing together ecosystem participants to ensure the efficiency of the value chain; the digitisation of agricultural machinery using modern technical means – sensors and touch devices, which are the largest generators of data. It is predicted that the next stage in the evolution of "Agriculture 5.0" will be based on the comprehensive robotisation of agri-food production using various forms of artificial intelligence [193].

The development of marketing management in an agricultural enterprise cannot take place without the use of innovations, management decisions and their digitalisation, since the level of activation of the latter determines the overall level of competitiveness in both the domestic and foreign markets. Therefore, the comprehensive introduction of innovations contributes to increased labour productivity, savings in various types of resources, reduced costs and lower production costs of agricultural products, increased volumes and growth in the efficiency of agricultural production, which makes it possible to attract larger volumes of investment. Digital transformation and technological innovations in agriculture, alternative energy sources, biotechnology, automated production, diversification and improvement of robots are causing fundamental changes in the quality of human capital and forming new requirements for the level of knowledge and competence of personnel.

The need to master digital knowledge is driven by factors such as increasing globalisation, longer life expectancy, workplace automation, digitalisation, the spread of communication and media using information and communication technologies, and the transformation of workplaces under the influence of new technologies [132].

On 17 January 2018, an updated version of the key competences for lifelong learning was approved – Recommendation 2018/0008 (NLE) of the European Parliament and of the Council (EU): literacy competence; language competence; mathematical competence and competence in science, technology and engineering; digital competence; personal, social and learning competence; civic competence; entrepreneurship competence; cultural awareness and expression competence. According to the Recommendations, "digital competence involves the confident, critical and responsible use of and interaction with digital technologies for learning, work and participation in society. It encompasses information and data literacy, communication and collaboration, digital content creation (including programming), safety (including digital wellbeing and cybersecurity competencies) and problem solving.

Developing digital competence in potential and existing employees of agricultural enterprises requires bringing them closer to and adapting them to global practices. Currently, the European Union has developed guidelines on digital competences for citizens, which consist of five digital competences with corresponding digital skills.

In the coming decades, the level of digital competence will determine the competitiveness of personnel when hiring, and high-quality digital skills will become one of the mandatory requirements of employers. The digital skills of human capital must be developed at three levels [158]:

– higher level – digital economy and digital entrepreneurship management skills: the ability to identify new business opportunities, new business models, new ways of doing business, the ability to innovate and manage change;

– intermediate level – specialised digital skills: skills required for research, development, design, strategic planning, management, production, consulting, marketing, sales, integration, installation, administration, support and maintenance of software and information and communication technology systems;

– low level – digital user skills: digital literacy, skills necessary for the effective use of information and communication technology tools, systems and devices, covering the use of the Internet, applications, basic and advanced software and specialised tools that support specific business functions [158].

To study the level of competence of management personnel in agricultural enterprises, several important elements of enterprise management awareness can be identified:

1. Knowledge. That is, whether the higher education institution where the management personnel studied offered courses in marketing, management, and marketing management, the quality of teaching such courses, etc.

2. Skills. That is, the ability of management personnel to apply the knowledge of marketing, management and marketing management acquired at the higher education institution in practical activities. Quite often, management personnel of agricultural enterprises, despite having the relevant marketing training, are unable to apply the knowledge and skills they have acquired in practice. An important aspect here is the personal and professional qualities of the employee: the ability to innovate, intuition, strategic thinking, etc.

3. Skills. The ability of management personnel to automatically apply the acquired knowledge and skills in marketing, management and marketing management in practical activities.

Following European and global digital trends in the processes of digital development of Ukrainian society, in particular the introduction of positive experience in the implementation of requirements for digital competencies, will enable a technological breakthrough and ensure Ukraine's equal positioning in global economic processes. It is possible to improve the digital competence of agricultural enterprise personnel through offline and online training (Fig. 1.7).

As for the forms of work, it is necessary to simultaneously develop the possibilities of offline and online training in marketing management. At the same time, the offline format should be based on short (within one day) trainings, seminars or other forms of work. It is advisable to promote the exchange of experience between agricultural producers in the form of discussions of successful practical cases based on real situations in the agricultural business. Round tables and meetings should be held where participants can share the problems they encounter in marketing their products and discuss successful ways of solving them that have been implemented by other farmers. It should be noted that the activities of most agricultural producers, especially those engaged in the cultivation of crop products, are characterised by seasonality and significant unevenness in the distribution of work throughout the year. Seasonality is also partly characteristic of producers of certain types of livestock products (in particular, honey, wool, milk, eggs, etc.).

Therefore, offline work should be carried out mainly in the off-season, when farmers and employees of agricultural enterprises and farms have a relatively smaller workload or are not involved in production at all. That is why, after short one-day training sessions, it is necessary to use online training formats through the use of Internet resources by registered students. It is also advisable to use the online format to discuss urgent issues on forums and provide advice on various issues related to the development of sales and marketing systems.

The digital competence of employees is important for marketing management, in particular when searching for buyers, suppliers, studying market conditions, which should be done using the information resources of global networks, optimisation tools, automated enterprise information systems, statistical and econometric analysis tools and applications, free software, Internet services and mobile applications.

The components of digital competence use by agricultural producers are shown in Fig. 1.8.

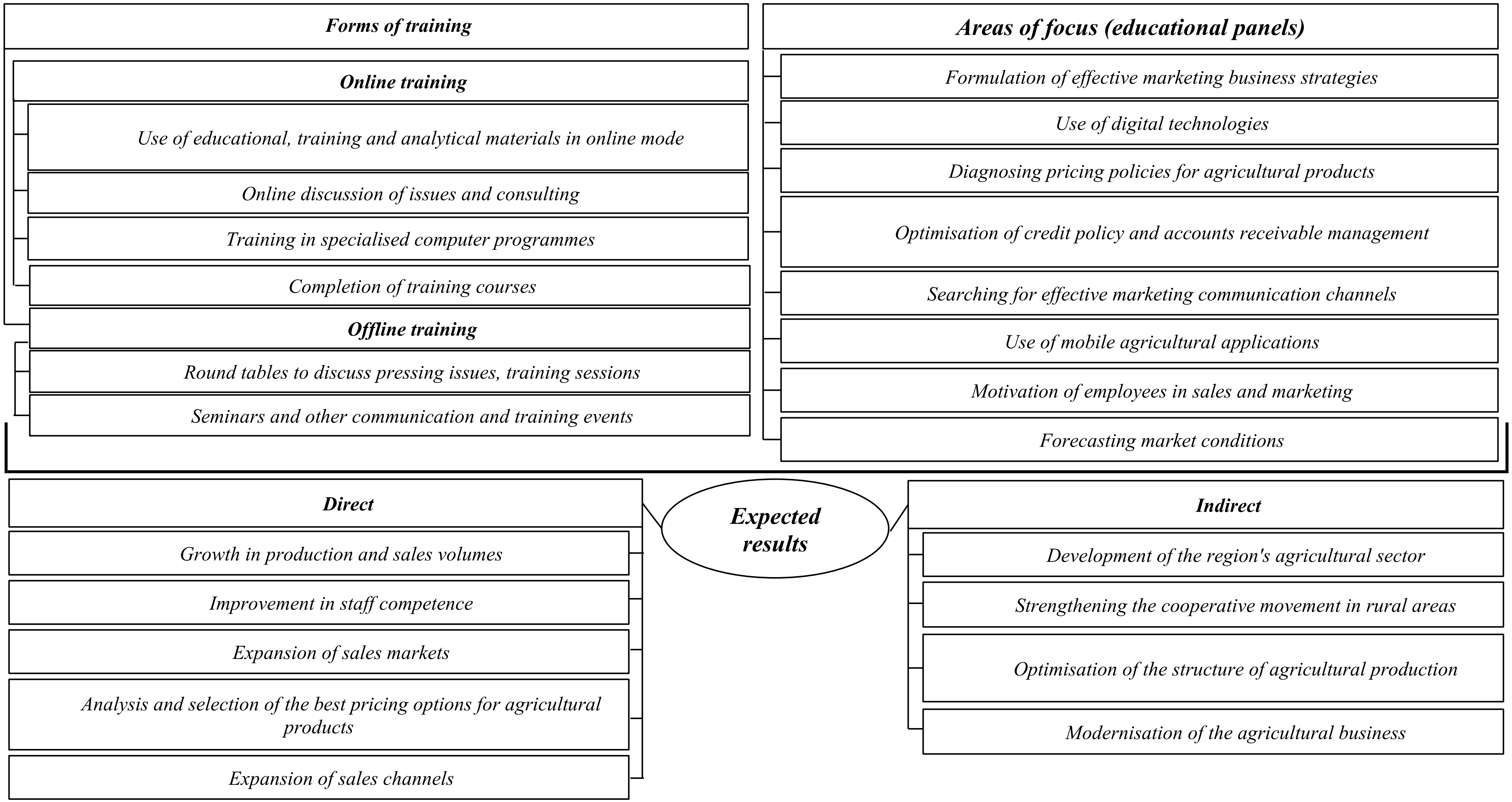

Fig. 1.7. Implementation of offline and online training*

Note. *Developed based on: [165]

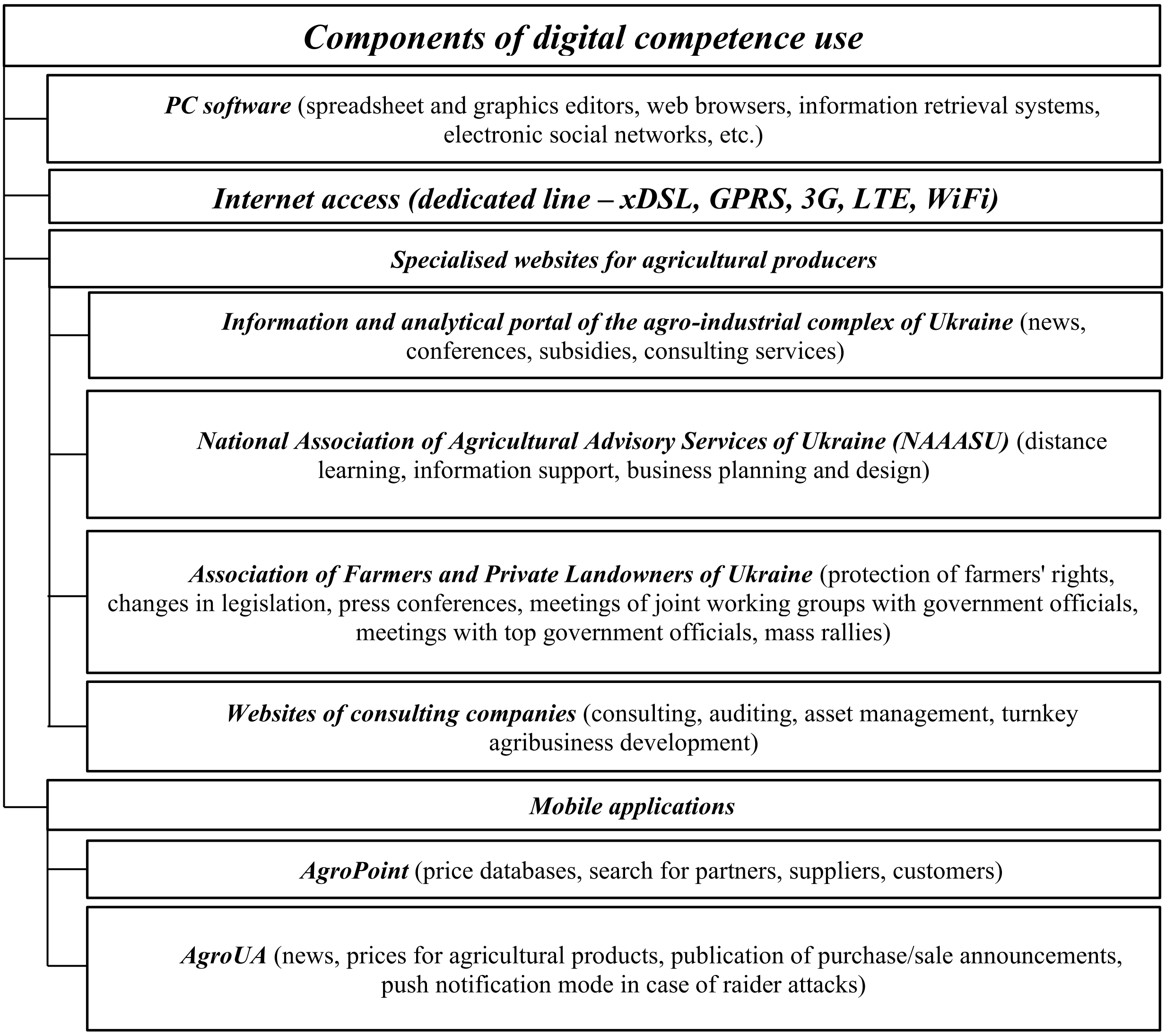

Fig. 1.8. Components of digital competence use by agricultural producers*

Note. *Developed by the author

Today, one of the indicators of an employee's digital competence is the ability to work with general and professional software to solve a range of marketing tasks, which involves the use of text, spreadsheet and graphics editors (WordPad, MS Word, OpenOffice, MS Excel, Adobe Photoshop, MS Picture Manager, MS PowerPoint), web browsers (Google Chrome, Safari, Internet Explorer and Edge, Mozilla Firefox, Opera), information retrieval systems (Google, Yahoo, Bing, Baidu), electronic social networks (Facebook, Instagram, Twitter), cloud data storage (Dropbox, Google Drive, OneDrive, iCloud), database management systems, network programs, etc.

The application of marketing management tools in the activities of an agricultural enterprise requires the use of modern services and websites, which is impossible without the appropriate digital competence of the employee. For example, Google Alerts can track all information appearing on the Internet about selected products, including agricultural products, and send selections to email. Google Trends is one of the most promising services for conducting marketing research, as it measures what people are searching for right now, determines the number of users searching for a particular product, and illustrates current interest.

After analysing the information sources of the websites of Ukrainian government institutions (ministries, departments, regional administrations), it can be noted that one of the important websites containing a lot of useful information for the development of agricultural enterprises is the "Information and Analytical Portal of the AIC of Ukraine" [135]. The website provides information on the latest news in the field of agriculture in Ukraine, dates of conferences, what subsidies are available and how to obtain them, and many other advisory services. In the context of martial law in 2022, a number of options for supporting agricultural producers are provided, as mentioned in the previous section.

Information for agricultural enterprises in Ukraine, in addition to the websites of state institutions, can be found on the websites of agricultural associations and independent public associations. For example, the website of the National Association of Agricultural Advisory Services of Ukraine (NAASU) provides information on distance learning opportunities and information support on new technologies for economic activity, agricultural production, business planning and innovative project design, development of marketing strategies, and diversification of core activities [171]. The website of the Association of Farmers and Private Landowners of Ukraine provides up-to-date information on the protection of farmers' rights, changes in legislation, press conferences, statements to the Verkhovna Rada of Ukraine, the Cabinet of Ministers of Ukraine, executive authorities, local self-government bodies, meetings of joint working groups with government officials, meetings with top state officials, mass rallies, and farmers' protests [120].

It should be noted that information and consulting services for agricultural enterprises can also be provided by private consulting companies that sell machinery and equipment, agrochemicals, and other products for agricultural enterprises. For example, Agro Consulting Group is a direct producer of full-cycle agricultural products (cereals and oilseeds: corn, soybeans, wheat, sunflowers) and provides services for auditing and managing agricultural assets [140]. There are also consulting companies in Ukraine that offer turnkey agribusiness development services. For example, Agricultural Consulting Service provides technical audits of agribusinesses, turnkey agricultural projects and farms, and agribusiness consulting [193]. However, the activities of these structures are related to the promotion of specific (own) products on the market or are focused on cooperation with large enterprises in specific product sectors. Advisory services provide a much wider range of services, focusing on the application of developments from various domestic and foreign manufacturers. They significantly expand the access of agricultural producers to scientific achievements and best practices.

Another useful website for agricultural enterprises is Agrianalytica [116]. It is the only platform in Ukraine that offers agricultural producers the opportunity to find optimal financing and purchase the necessary material and technical resources from leading market operators, apply for state support, sell their harvest profitably, and prepare for the opening of the land market: optimise their business processes and increase their financial literacy with integrated online products Agri:Accounting, Agri:Business Plan and Agri: Accounting + Production Management (Fig. 1.9). There is now a wide range of digital technologies available to agricultural enterprises. Rudenko M. V. has grouped the modern digital technologies used by agricultural enterprises into five main groups: space technologies; sensors and detectors; information and communication technologies; artificial intelligence and Internet technologies.

The efficiency of an agricultural enterprise can be improved by training employees to use geoinformation systems.

"Digital" (precision) farming is a fundamentally new management strategy in agronomy, based on the use of "digital" technologies and new technical means, and also involves the implementation of technological measures for growing plants, taking into account the spatial heterogeneity of the field. This is a new stage in the development of the agricultural sector, associated with the use of geographic information systems, global positioning, on-board computers, management and executive mechanisms capable of differentiating cultivation methods, fertilizer application rates, chemical soil improvers and plant protection products. Precision technologies in agriculture are primarily aimed at economic efficiency and soil protection, increasing yields per hectare of land, reducing crop losses in the fields and increasing the coefficient of useful use of the country's land bank as a whole [184].

Agrianalytica

Agri: Business Plan:
- Ukrainian online programme created specifically for farmers (suitable for all types of activities);
- free 24/7 support from a personal consultant;
- suitable for obtaining state support, grants, bank loans;
- helps attract investment;
- enables you to better understand your business and make it even more profitable;
- a living business plan that can be changed and updated throughout the year as needed

Agri: Accounting:
- Ukrainian online programme created specifically for farmers (suitable for all types of activities);
- free 24/7 support from a personal accountant-consultant;
- all accounting entries and primary business documents are generated automatically;
- generation of financial and statistical reports;
- complete analysis of production income and expenses

Agri: Accounting + Production Management:
- Ukrainian online programme created specifically for farmers (suitable for all types of activities);
- free 24/7 support from a personal consultant;

In addition to the Agri: Accounting module, you get:
- control over the use of material and technical resources;
- plan/actual income and expenses;
- all the analytics a manager needs to make management decisions

Fig. 1.9. Products from Agrianalytica*

Note. *Developed based on: [116]

Geographic information systems can be used to solve the following tasks:

– centralised storage and management of an agricultural enterprise's cartographic database (the resource contains information on the boundaries of land plots and agricultural land, cartograms of agricultural soil groups, crop rotation projects, agrotechnical passports of land plots, land allocation projects with all accompanying documentation, digital terrain models, etc.);

– effectively manage land resources, promptly resolve territorial conflicts and illegal land seizures, monitor landowners and land users;

– control the performance of agricultural work in the fields, track crops in terms of crops and fields;

– assess soil quality, its potential yield, agroecological condition, degradation processes (identification of particularly valuable soils, nature of soil cover, distribution of land by slope steepness and exposure, contamination by chemical products);

– analyse the effectiveness of agricultural management (justify the feasibility of land parcelling and land formation, assess the compliance of land use with the agricultural potential of soils, etc.);

– conduct operational audits of agricultural land, monitor the activities of remote (field) workers (land surveyors, agronomists), ensure the possibility of collecting spatial data in the field in real time thanks to a mobile mapping application connected to an interactive map;

– automate the process of reporting, planning and forecasting the development of the enterprise [166].

We will distinguish between the capabilities of sensors and detectors used in precision farming by individual blocks and explore in depth the possibilities for the practical use of digital technologies in the field (Fig. 1.10).

Robotic greenhouses and livestock complexes can also be introduced into agricultural production, which will result in significant savings through more efficient use of water, fertilisers and plant protection products. In addition, such technologies will optimise the number of personnel involved in crop care and minimise losses due to human factors.

The use of special sensors and monitoring software included in the robotic livestock complex helps to increase animal productivity and, as a result, improve the quality of the final product through the introduction of automated feeding and milking systems in agricultural enterprises. The use of software and hardware for monitoring the health of cows contributes to an increase in milk yield of up to 40%.

Sensor and detector blocks
The first block of sensors and transducers ensures maximum accuracy in crop monitoring by measuring a wide range of parameters related to weather conditions (measurement of wind speed and direction, precipitation), soil morphology (water potential, temperature and oxygen level in the soil), fertilizer requirements (determining the required amount of fertilizer using the Subscription Index of Electrical Resistance), solar radiation (sensors that measure ultraviolet and short-wave radiation, radiation for photosynthesis), plant growth (dendrometers that monitor the growth of roots, stems and the fruit itself, sensors that measure the temperature of plants on the surface), radiation, etc.
The second block consists of agricultural sensors that allow for high-precision determination of plant vegetation indices. Of course, it is possible to determine various plant vegetation indices using satellite images (space technology), but the accuracy of such calculations is not high enough. Therefore, a small camera with two sensors, mounted on any UAV, will be able to collect actual visual data on plants in individual fields or plots online, which will help agronomists of agricultural enterprises identify problems with their crops much earlier and with greater accuracy.
The third block consists of soil sensors that analyse its condition and the amount of water it needs. A specific feature of soil sensors is their ability to determine the moisture requirements in different parts of the field, which prevents waterlogging and the leaching of beneficial micronutrients if artificial irrigation is used. The use of these sensors allows for the analysis of soil conditions in a specific area of the field and the application of a standardised amount of water, which will subsequently enable the creation of a fully automated irrigation system.
The fourth block consists of sensors that allow monitoring the presence of pests in a specific part of the field. If the detected indicators exceed the critical number of pests, an automated signal is sent to the agronomist of the enterprise to make a decision on localising or eliminating the problem, which can be solved by the rapid distribution of biological substances or beneficial insects using UAVs or other available tools.
The fifth block is closely related to the management and capabilities of the Internet of Things, since it is only possible to combine the above-described set of signals from all sensors and detectors into a single system using Internet tools and, on their basis, to continuously monitor and control the detectors in the field. Timely processing of signals from sensors and detectors will provide sufficient time for management response and problem resolution. Sensors and detectors allow you to monitor fields, livestock and equipment over long distances. Remote diagnostics systems for equipment and machinery alert mechanics and maintenance engineers to potential malfunctions. Collars for animals with GPS, RFID or biometrics transmit biological information about the condition of livestock 24/7. The use of infrastructure condition sensors will allow you to monitor the physical condition of agricultural buildings and track vibrations, etc.

Fig. 1.10. Sensor and detector blocks*

Note. *Developed based on: [166]

Thus, the practical use of sensors and detectors significantly enhances the processes of digital transformation of both production processes and the management of agricultural enterprises. Over the past 10–15 years, the capabilities of agricultural technologies have grown exponentially, while their cost has steadily declined, leading to significant growth in the AgTech (agricultural technology) market. Therefore, ignoring modern digital drivers of agricultural development makes it impossible to increase its efficiency, which is a key task for domestic agricultural enterprises.

The use of drones is becoming increasingly popular in agricultural enterprises. For example, in China, 15% of work in the agricultural sector is performed by drones, and this share is constantly growing. DroneUA [129] is the market leader in drones in Ukraine. The main services provided by DroneUA to agricultural enterprises are shown in (Fig. 1.11).

Main services provided by DroneUA

- **Field monitoring with drones**
- **Nitrogen application maps**
- **Herbicide application maps**
- **Visual and NDVI field maps**
- **Field measurement**
- **Research and analytics**
- **Application of plant protection products**
- **Trichogramma**
- **Soil analysis AgroCares**

Fig. 1.11. Main services provided by DroneUA*

Note.*Developed based on: [129]

Today, drones are primarily used to monitor the condition of plants at various stages of their development. This includes assessing weed infestation, disease and pest damage, and determining the availability of nutrients and water to plants. This also includes monitoring soil conditions, i.e. high-precision survey data is used to create soil maps, assess soil heterogeneity in terms of humus content and nutrient availability, monitoring soil degradation processes and, in general, any processes occurring in the study area, measuring fields, visual and NDVI maps, maps of fertiliser and plant protection product application, direct application of fertilisers and plant protection products, and application of trichogramma.

Research conducted for Agribusiness magazine on the use of drones by agricultural enterprises in Ukraine shows that most agricultural producers order the service of measuring land banks using drones, and unfortunately, their use is still limited to this.

For example, blockchain in agriculture allows tracking information in the agri-food value chain in order to improve food safety. Scientists [201] note that the use of blockchain technology in agriculture has potential advantages:

– reduction in transaction time;
– product quality control;
– prevention of product counterfeiting;
– improving product quality;
– transparency of operations;
– supply chain organisation;
– supply chain traceability;
– simplification of product sales;
– consumer awareness increasing consumer satisfaction;
– reduction of overall costs transaction fees;
– reducing dependence on intermediaries [201].

Blockchain technologies can track all kinds of information about plants, including seed quality and the cultivation process, and create a record of the plant's "journey" when it leaves the farm. This data can increase the transparency of supply chains and reduce problems associated with illegal and unethical production and product contamination. Among the risks, experts highlight abuses that may arise when using private blockchains, which have a lower level of security.

Agricultural robots automate slow, monotonous, and repetitive tasks, allowing farmers to focus more on improving overall productivity and efficiency. The most common robots in agriculture are used for: harvesting crops; weed control; autonomous mowing, pruning, sowing, spraying, diluting, etc.; sorting and packaging; milking livestock, etc.

Today, there are many obstacles to the use of robotic systems by agricultural enterprises. For example, a robotic system for harvesting sweet peppers, which was tested by leading farms in southern Ukraine. Vision systems must determine the location and ripeness of peppers in harsh conditions, including dust, varying light intensity, temperature fluctuations, and wind movement. Therefore, domestic practice has shown that the use of robots for harvesting is still limited.

In today's world, it is impossible to imagine anyone's activities without the use of a mobile phone, especially mobile applications. Mobile applications are one of the sources of information on the Internet that are gaining popularity among agricultural producers. Mobile devices are becoming more and more common in the agricultural sector every year. However, most agricultural workers use mobile phones mainly for communication and social media, without developing their skills in searching for mobile applications, more advanced services and websites.

The use of mobile applications allows agricultural enterprise personnel to achieve a number of important effects (Fig. 1.12).

Mobile applications can be divided into programmes for internal enterprise needs and for external communications, depending on how they are used in an agricultural enterprise. Internal applications are used on employees' devices or on enterprise devices. Based on [179], we can highlight the most popular types of internal agricultural mobile applications, which include:

– systems for general access to the enterprise's working files and joint work on them;

– mobile versions of corporate social networks;

– internal communication, messengers, message trackers;

– field work management systems that require constant collection, refinement, and synchronisation of information;

– systems for collecting marketing information and analysing the company's product, pricing, sales and distribution policies;

– automation of document flow processes, etc. [179].

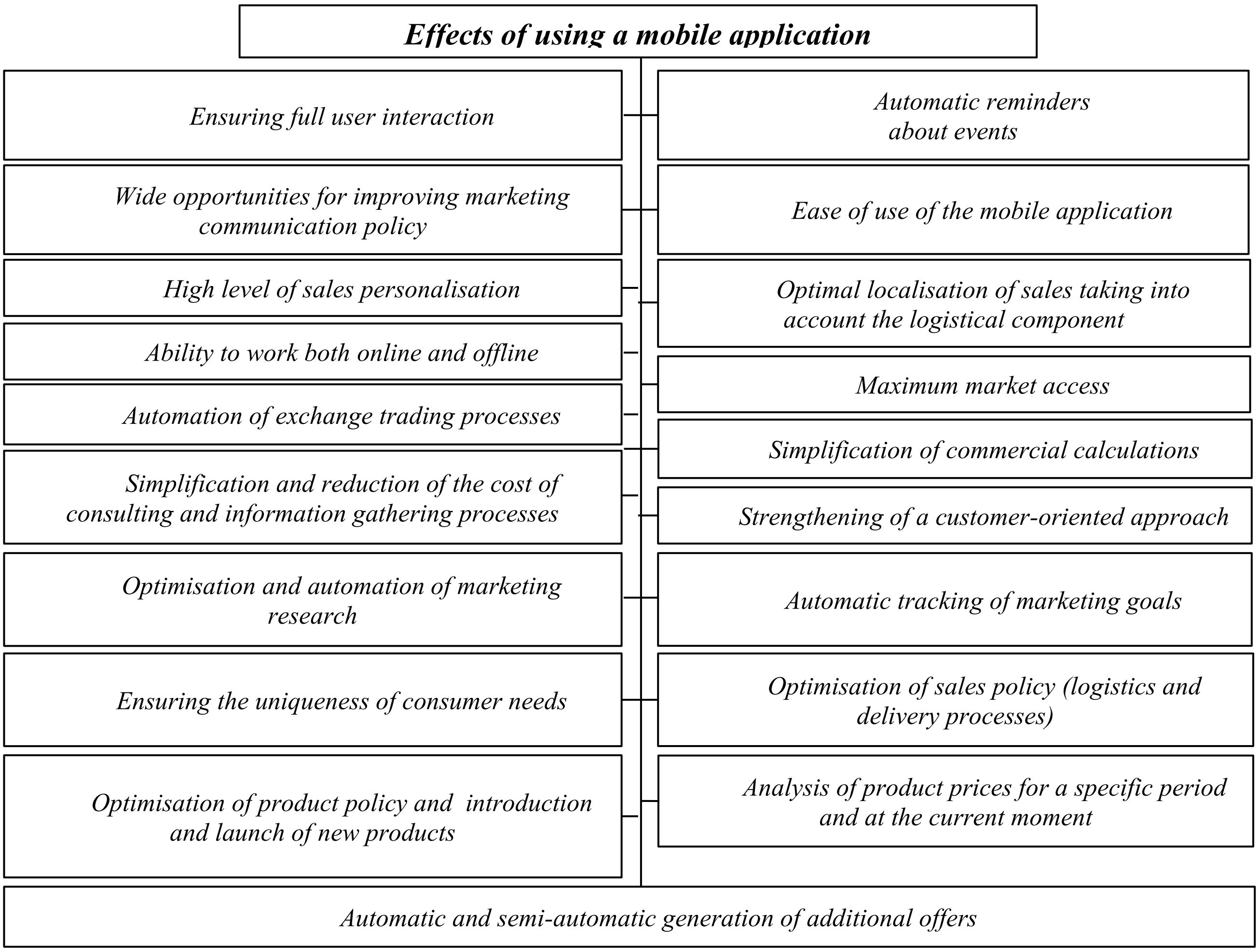

Fig. 1.12. Effects of using a mobile application*

Note: *Developed based on: [165]

Agricultural mobile applications for external use are usually designed to search for business partners, product markets, suppliers of raw materials, seeds, plant protection products, fertilisers, etc., product customers, etc. For example, the AgroPoint mobile application is designed to search for agribusiness partners. Using it, users can find the necessary services, partners, suppliers, and customers in agriculture anywhere in the country with just one click [166]. The PROD mobile application was created for farmers by the USAID Agricultural and Rural Development Support Project. It is a convenient application for working with a database of prices for vegetables and fruits throughout Ukraine. Users receive only current prices for fruit and vegetable products, without having to visit numerous unrelated websites. Everything is carefully collected in one place. With just a few clicks, you can find out how much a product costs and determine the best price for your purchase. The app allows you to post your own ads for buying and selling fruits and vegetables, quickly contact the author of the ad directly (without intermediaries) to make a deal, and get detailed information about the cost and characteristics of the product, etc. [202].

The founders of the AgroUA mobile app position their product as an agricultural information and communication platform. The app has a wide range of applications, from news and current prices for agricultural products to placing commercial and informational ads. The AgroUA mobile app allows you to be at the epicentre of the country's agricultural life and keep up to date with new events and technologies. You can promote yourself to all market participants, publish in catalogues, advertise yourself and your products, and announce events and innovations. It is also possible to announce tenders, place advertisements for buying/selling, communicate in the forum, follow offers and vacancies on the market, promote yourself to employers, share your experience, follow tenders from agricultural holdings, read news, visit all agricultural Facebook groups, visit all popular agricultural websites, use guides to some agricultural events, and many other opportunities.

An important feature of external agricultural mobile applications is the ability to send push notifications, which allows you to quickly send information to all users at once. Such notifications are displayed on the screens of mobile devices, allowing you to reach all subscribers without exception. Push notifications are a powerful channel for transmitting information to the target audience. This service is used in the AgroShchit project to help farmers in the event of raider attacks (the "raiding" button). The use of modern mobile applications for agricultural enterprises requires employees to have the appropriate skills and literacy.

Social networks are also becoming a popular marketing platform for agricultural enterprises. They provide agricultural enterprises with significant opportunities for interaction and communication with consumers. This allows consumers to exchange information with each other, thereby the effect of electronic interaction, forming social groups. Such online communities facilitate interaction between consumers and agricultural enterprises, which can shape the perceptions of potential customers and ideas. In addition, leading agricultural holdings have begun to use millionaire bloggers from social networks. These are people who have built a reputation through their knowledge and experience on a particular topic and have gained a large number of followers. With the support of social media bloggers, agricultural enterprises promote their products and services on social media platforms such as Instagram, TikTok, Facebook, YouTube, and Weibo. This allows brands to establish individual connections with consumers in a much more personalised way.

The use of modern digital technologies is impossible without an Internet connection, which is the main source of unlimited opportunities for acquiring knowledge, skills and abilities. However, today most agricultural workers do not have access to high-quality high-speed Internet. According to the national commission that regulates electronic communications, radio frequency spectrum, and postal services, the number of active SIM cards used to connect to the internet in 2022 was 35.356 million. Of these, 26.424 million were 4G SIM cards. Mobile operators themselves estimate that population with access to high-speed mobile internet at approximately 90% [127].

Currently, more than 80% of the population in Europe has access to the internet. The fundamental difference that allows EU countries to achieve universal coverage is the use of low-frequency bands (800–900 MHz) with technological neutrality.

Another equally important tool for the digitalisation of agricultural enterprises is e-commerce on the internet, as an effective component of promotion, advertising and sales of goods. That is why, in order to expand product sales channels and interact more effectively with consumers and suppliers, agricultural enterprises are encouraged to develop their own websites.

When developing websites, it is necessary to use keyword research tools to identify the most relevant and popular search terms in the field of agricultural production. After that, it is advisable to insert keywords into the content of web pages, metadata and other HTML attributes. This improves the recognition of content by robots during scanning and contributes to the growth of the site's position in the Google search engine.

Another important component in website development is proper structuring and intuitive navigation. It is also important to fill the pages with high-quality content relevant to the subject matter of each individual agricultural enterprise. It is beneficial to systematically and regularly publish blog posts and videos about the company's product range. It is advisable to use targeted keywords in the descriptions, which will help transform companies into authoritative sources of information in the agricultural sector.

Having analysed various approaches of scientists to digital competence and digital technologies in agriculture, in our opinion, the implementation of digitalisation in the marketing management of an agricultural enterprise should consist of the components shown in Fig. 1.13.

Digitalisation in the marketing management of agricultural enterprises

Aerospace:
- *satellite images;*
- *drones;*
- *unmanned aerial vehicles (UAVs);*
- *geographic information services (GIS)*

Sensors and detectors:
- *intelligent biosensors;*
- *high-tech agricultural sensors*

Information and communication:
- *digital platforms;*
- *agricultural mobile applications and managers*

Artificial intelligence:
- *machine learning;*
- *robotics;*
- *IoT (agricultural Internet of Things);*
- *Big Data (processing of structured and unstructured data);*
- *3D printing*

Internet technologies:
- *IoT (agricultural Internet of Things);*
- *4G-5G Internet;*
- *agricultural online applications and services;*
- *Blockchain technologies;*
- *smart contracts;*
- *agriforums*

Biotechnology:
- *precision farming;*
- *plant breeding;*
- *hybridisation;*
- *genetic engineering;*
- *tissue culture*

Improving the digital competence of staff:
- *Online classes;*
- *Offline classes;*
- *Training sessions;*
- *Offsite conferences, etc.*

Fig. 1.13. Components of digitalisation in the marketing management of an agricultural enterprise*

Note.*Developed based on: [184, 201, 179]

Thus, digitalisation in the marketing management system of an agricultural enterprise is not possible without the introduction and development of digital technologies (aerospace, sensors and detectors, information and communication, artificial intelligence, Internet technologies, biotechnologies) in all areas of activity of an agricultural enterprise. In addition, the effective implementation of digital technologies requires personnel who possess the relevant digital competencies.