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ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

**PROBLEMS OF FORMATION AND DEVELOPMENT
OF MARKETING ENTERPRISE COMMUNICATIONS
IN THE CONDITIONS OF INFORMATION SOCIETY**

Specialization: 5308.01 – General economics

Field of science: Economics

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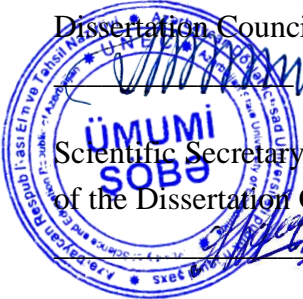
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GENERAL CHARACTERISTICS OF THE STUDY

Relevance of the Topic and Degree of Elaboration. Cardinal changes in marketing activity, both generally in the sphere of entrepreneurship and at enterprise level, have contributed to the systemic restructuring of the communicative space of business entities and the improvement of their communication strategies. This is primarily due to the significant transformation of business activities and the strengthening of the competitive environment, which makes increased demands on companies in the field of creating innovative technologies for promoting goods in the information society. This necessitates new conceptual approaches to rethinking the meaning and content of marketing communication strategies (MCS) and developing and implementing their effective types based on modern information and communication technologies (ICT).

Within the framework of the emerging information and digital landscape and the comprehensive penetration of ICT into various layers of the market economy, there has been a noticeable increase in the speed and availability of information and a redistribution of the importance of various information flows for making managerial decisions. Under these conditions, marketing communications (MC) become the main factor in improving enterprise competitiveness, determining the importance of studying and satisfying the demand of existing and potential target audiences and forming a scientific and methodological basis for applying marketing tools in commercial structures' management practices.

The adoption and implementation of management decisions by enterprises is impossible without information marketing support. At the same time, the study of their operational experience and specialized literature reveals an inadequate exploration in the use of integrated marketing communications (IMC) in business management.

Current issues related to the study of specific aspects for marketing theory are reflected in the scientific works of foreign and domestic scholars alike. Significant contributions to the study of MCS issues have been made by representatives of Western economic thought: I.Ansoff, G.Assel, B.Berman, J.Barlow, R.Best, J.Gitomer, R.Jay, D.Jobber, I.

John, P.Doyle, F.Kotler, J.Lamben, M.McDonald, G.Mintzberg, M. Porter, K.Naresh, J.Shonesy, G.Holland, L.D.Chernatoni, J.Evans, and others. Separate aspects related to the management of MC, integrated approach to their use, transformation of marketing tools and evaluation of their effectiveness were covered in the fundamental works of scientists of post-Soviet countries – O.E.Akimova, V.A.Aleksunin, B.V.Artamonov, I.B.Arkhangel'skaya, A.E.Arkipov, A.G.Bespalov, I.V.Borushko, T.A.Burtseva, T.N.Vasilieva, O.S.Gabinskaya, E.N.Golubkova, M.R.Golubkova, M.R.Zobnina, I.A.Ibragimov, L.M.Kapustina, I.M.Karasik, G.P.Kozhevnikova, S.V.Kulpin, E.G.Lashkova, M.A.Ladozhinskaya, E.R.Latypova, I.L.Litovchenko, V.L.Muzykant, A.M.Predein, O.A.Romanenko, A.S.Tarasov, A.V.Tkacheva, M.I. Fatkulina, A.V.Khristoforov, F.I.Sharkov, Y.V.Shurchkova and others.

However, these studies are theoretical in nature and require adaptation for application in Azerbaijan's national economy. Among domestic scholars who have highlighted MC as an effective way of interacting with customers in their works are I.M.Abbasov, T.V.Akhmedova, R.K.Akhundov, S.A.Akhundov, A.S.Ashurov, L.A.Hajiyeva, F.V.Guliev, E.N.Guliev, E.I.Ibishov, T.I.Imanova, A.T.Mamedov, D.D.Mamedov, S.G.Mirzoeva, I.M.Heirhabarova, R.S.Shukurov, and others.

At the same time, it should be recognized that, although significant progress has been made in the study of the issue in question thanks to the works of the above-mentioned and other scientists, some aspects of this important scientific and practical problem remain insufficiently disclosed. There are still few works that reflect the specifics of the development and implementation of MCS in the modern information society and in conditions of economic digitalization and the prevalence of the virtual environment. Furthermore, the conclusions of foreign authors regarding the formation and development of MC cannot be considered universal recommendations for Azerbaijan's business system, which is still developing and has certain peculiarities.

At the same time, the conceptual apparatus and regulatory and legal foundations of MC are poorly covered in the economic literature. There is still no consensus on the theoretical and methodological justification of the place and role of MC for entrepreneurship in the information society, which remains the subject of scientific debate. It is also important to

review the traditional paradigms of IMC and the methods for assessing their effectiveness. In addition, the problems of effective implementation of ICT and assessment of their effectiveness in the context of the dominance of information and digital channels for their implementation have not been properly considered and have not been the subject of comprehensive study in domestic science; to date, there are no research publications on many of them.

Insufficient consideration of these issues and their significant relevance determined the choice of research topic, the definition of the objective, the formulation of tasks, and the logic of the dissertation structure.

Object of the Research. The processes of marketing communication activities of enterprises.

Subject of the Research. The theoretical, methodological, and applied aspects of the formation and use of MCS in the information society.

Aim and Objectives of the Research. The aim of this work is to conduct a comprehensive study of the theoretical, methodological and practical issues of the formation and development of MC in enterprises and, on this basis, to develop the main directions for their improvement and assessment of economic efficiency in the information society.

To achieve this, the following tasks were set and solved:

- carry out the systematization, classification and evaluation of the existing theoretical and methodological bases for the development of communicative processes within the marketing systems of enterprises;
- formulate the conceptual provisions of IMC in the information society;
- identify the peculiarities and target orientation of MCS in the modern information environment;
- identify the main technological changes in the information society that influence the emergence of qualitatively new types of IMC.
- order the indicators of the economic and communication efficiency of MCS in enterprises, and argue methodological approaches to their assessment.
- analyse the state of MC management based on modern information technologies and mathematical tools;
- diagnose the potential and substantiate the trends of increasing the economic efficiency of MC in the context of their rational

transformation.

- improve the toolkit for IMC by building an effective system within the organizational structures of enterprises.
- develop practical recommendations for the formation, development and implementation of MCS in enterprises in various sectors using modern ICT.

Research Methods. The theoretical basis of the research was the provisions of classical and modern economic science and the works of domestic and foreign authors on the information society and MC, as well as the development of their strategies. The principles of dialectical logic were employed to consider all phenomena and processes in development and interrelation. Such methods and techniques of scientific cognition as the system approach, scientific abstraction, analysis and synthesis, statistical grouping, expert evaluation, scientific justification and abstraction, graphic interpretation, induction and deduction, classification, comparative analysis, dynamic comparison, detailing and sample observation were also used. Economic and mathematical modelling was also employed. The information base of the research comprised legislative and normative-legal documents related to the dissertation topic; official materials from the State Statistics Committee and statistical reports from other state authorities in the Azerbaijan Republic; reports from international consulting, research and industry organizations; data from statistical yearbooks and information-analytical bulletins; and publications from domestic and foreign scientists on the chosen topic and related subjects.

Main Provisions Submitted for Defense. As a result of the dissertation research, the following provisions have been put forward:

1. The development of the theoretical and methodological foundations for the formation of MC in the information society. This includes the formulation of its essence and main categories, the identification of the main features and strategic direction of IMC, identification of patterns and principles for managing it.
2. The argument that communication processes strengthen the marketing systems of enterprises, based on a corresponding set of indicators.

3. Methodological approaches to assessing the comprehensive and sectoral economic efficiency of IMC and its constituent elements within the context of an information-based economy.

4. Improving IMC tools by developing their effective mechanisms within the organisational systems of economic entities.

5. An algorithm for researching MC based on the application of, and effective interaction with, mathematical apparatus.

6. Practical recommendations for optimising the effectiveness of MC in service sectors.

Scientific Novelty of the Research. The scientific novelty of the study lies in the fact that, for the first time in domestic economic science, it carries out a comprehensive study of the problems associated with the formation and development of MC enterprises in an information society. Thus, it expands ideas about potential opportunities to improve their efficiency by introducing modern ICT.

The author obtained the following significant research results, which reflect the scientific novelty of the study and demonstrate the applicant's personal contribution:

- The theoretical and methodological foundations for the formation and development of MC have been specified and supplemented by clarifying their essence and main categories, and by identifying the methods, models, strategies, principles and patterns of their management.

- The role of communication processes within the marketing systems of enterprises has been substantiated, and a corresponding set of indicators has been proposed.

- The features of IMC have been identified, and their structural orientation defined.

- The tasks of comprehensive planning and modelling of MC have been completed.

- A comprehensive description and systematic analysis of the current state of MC in the context of the country's economic informatization has been provided.

- Methodological approaches to calculating the comprehensive and sectoral economic efficiency of IMC have been developed.

- The IMC toolkit has been modified based on the construction of an effective system within the organizational structures of enterprises.

- The main directions for improving MC and assessing its economic efficiency potential in trade, paid services, tourism and hospitality enterprises have been determined.

- A methodology for researching MC based on mathematical modelling has been developed, and an algorithm ('road map') for effective interaction has been proposed.

Theoretical and Practical Significance of the Research. Theoretically, the study involves the systematization of current MCS and the justification of forming a unified model in the context of developing ICT, as well as assessing the effectiveness of firms.

The practical significance of the study lies in the main provisions, ideas and proposals it contains:

- Firstly, they are designed to increase the economic efficiency of MC for enterprises and can be used by their marketing services for decision-making and developing appropriate concepts and strategies in this area. They can also be used to increase the efficiency of staff interaction and manageability of the communication block.

- Secondly, they can be useful as methodological material for managers and specialists in consulting marketing companies when preparing corporate marketing strategies and business plans.

- Thirdly, they can be used by public administration bodies to develop prospective industry strategies and prepare proposals to improve MC quality.

- Fourthly, they are of interest to researchers and marketing professionals when assessing the current state and future development of marketing activities.

- Fifthly, they can be used in universities and faculties with an economic focus, as well as industry training centers, when teaching academic disciplines on the fundamentals of marketing activities, the development and improvement of MC effectiveness, and in the relevant sections of the "Economic Theory" and "National Economy" curricula, as well as other specialized courses.

Validation and Application of the Research Work. The main

content of the dissertation was reflected in 13 scientific works (including 7 articles and 6 theses, of which 4 and 6, respectively, were published abroad) with a total volume of 6.1 printed pages, published in domestic and foreign journals and materials of international forums recommended by the under the President of the Republic of Azerbaijan's Higher Attestation Commission.

The MC firm efficiency assessment system obtained as a result of this study can be implemented in enterprises in the Republic of Azerbaijan. Based on their diagnostics, recommendations were developed for the formation of marketing services, which can be used to increase the efficiency of staff interaction and manageability of the communication block. The systemic methods, algorithms and proposals recommended in this study can be used to increase the efficiency of MC in various economic sectors.

The institution where the dissertation was carried out: Azerbaijan State Economic University (UNEC).

The volume of the dissertation, with the individual sections specified: The dissertation consists of an introduction (18920 characters), three chapters (173062 characters), including chapter I – 63430, chapter II – 40211, chapter III – 69421 characters, conclusion (22741 characters) and list of used literature. The dissertation, with a total volume of 214723 characters, contains 46 tables, 35 figures and a list of used literature of 301 titles.

STRUCTURE OF THE DISSERTATION

Introduction

Chapter I. Theoretical and methodological foundations of formation and development of marketing communications in the conditions of information society

- 1.1 The essence and main categories of marketing communications in the modern information environment
- 1.2 Peculiarities of integrated marketing communications and their strategic orientation
- 1.3 Integrated planning and modelling of marketing communications

Chapter II. Characteristics and sectoral analysis of the current state of marketing communications in the context of informatisation of the economy of the Azerbaijan Republic

- 2.1 Analysing the state of marketing communications management on the basis of modern information technologies
- 2.2 Collection and processing of information on economic sectors for conducting marketing research
- 2.3 Electronic marketing communications and calculation of advertising influence efficiency

Chapter III. Ways of improvement for marketing communications and determination of their economic efficiency

- 3.1 Improving the methodology of marketing communications research with the use of mathematical apparatus
- 3.2 Formation of integrated models of marketing communications at the enterprises of trade and paid services and optimization of their economic efficiency
- 3.3 Assessment of the potential for increasing the effectiveness of marketing communications at the enterprises of tourism and hospitality 3.3.

Conclusion

Bibliography

MAIN CONTENT OF THE DISSERTATION

1. The theoretical and methodological foundations of MC's formation and development in the context of the information society and digital economy were studied.

The modern information society is characterised by ICT penetration into all spheres of entrepreneurial activity. According to the author, the advantages of the network approach are combined with modern ICT to create new forms of communication and commercial activity in the digital environment. These new forms significantly modify business processes and require new conceptual approaches to rethink the meaning and economic content of MCS in enterprises' marketing activities. This, in turn, is changing the market orientation and competitiveness prospects of enterprises, based on studying and satisfying the demand of existing and potential target audiences through universal personalization. This necessitates the development and implementation of effective MC.

This thesis examines the evolution of scientific thought on the nature, methods and models of MC, and the specific features of their development in a digital environment. It also explores the contemporary interpretation of marketing and its role in the evolution of these strategies. A constructive theoretical analysis of the nature of strategic marketing in an information society has revealed the necessity to reconsider the paradigm of marketing functional strategies in favour of the dominant importance of the MCS implemented by enterprises using modern ICT. During the course of the research, the main conceptual provisions of MCS and IMC in the information society were substantiated. These are based on a system of views regarding their composition and structure, the prerequisites for effectiveness, and the impact of communication on target markets (see Fig. 1).

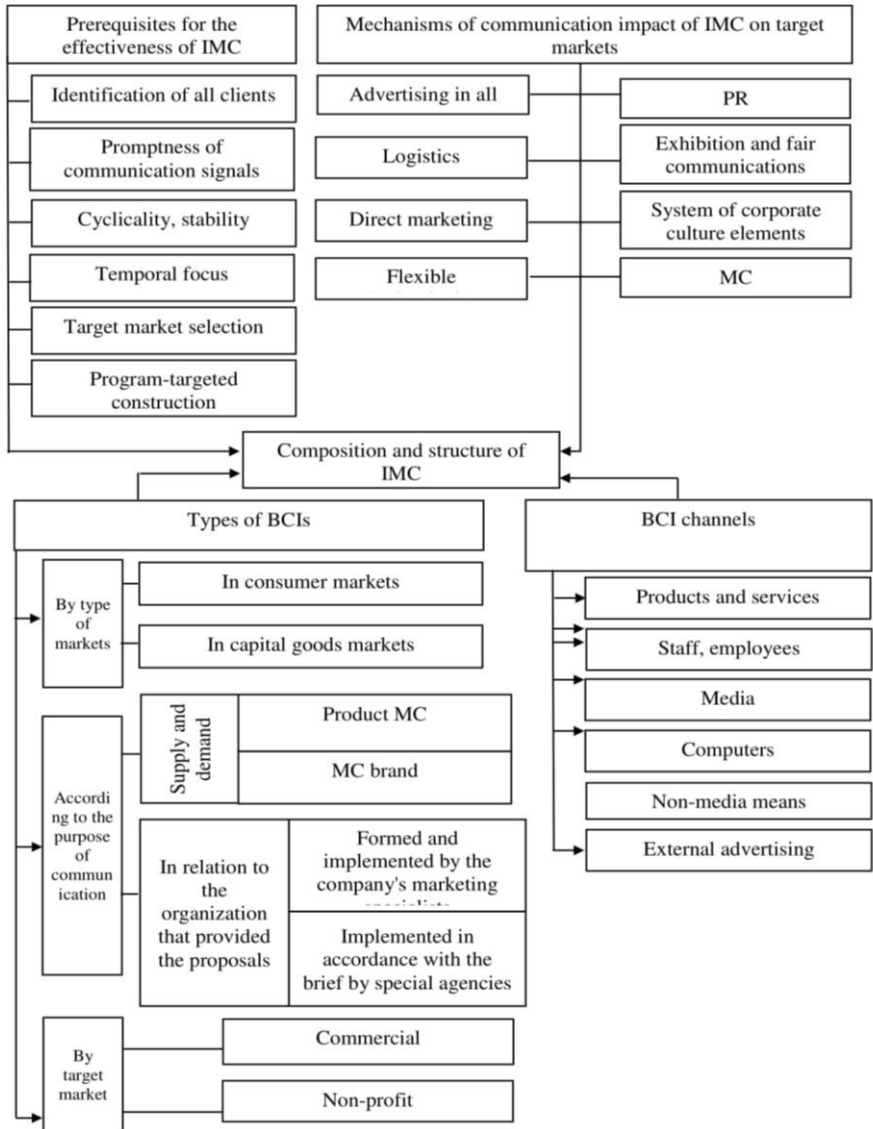


Fig. 1. Block diagram of the conceptual model of the IMC system in modern firms

Source: Compiled by the author

The thesis substantiates the conclusion about the cardinal change in the approach to enterprise MC in the conditions of informatization society and digitalization of the economy. The author focuses on the fact that in this environment the concept of MC in a completely new way (both in qualitative and quantitative aspects) solves problems related to such areas, as advertising (becomes very complex, multidimensional, multifunctional, and multilevel multistructured); sales promotion (new ratio in solving strategic, tactical, and operational tasks); public relations (PR forms new areas of external and internal public relations on the basis of e-commerce, etc.); and integral MC (solves the most complex integration tasks in the field of MC).

2. The methodological foundations of diagnosing IMC planning and modelling based on modern information and digital technologies.

In conditions promoting digital technologies, the integrated planning of marketing activities in general, and MC in particular, expands firms' potential opportunities for the effective allocation of resources and a prompt response to allowable changes in the external environment. This creates a favorable situation for the sustainable development of the market.

However, the analysis carried out in this study reveals that the marketing planning mechanism currently operating in domestic enterprises is, in most cases, based on the traditional model. Although this model allows for rational planning and adaptation of a firm's activity to existing market conditions, it focuses on achieved results. It often ignores the dynamism of possible transformations in the external environment and the potential variability of firms' market behavior in the future. Typically, the results of diagnostics and competitor and customer loyalty assessments are not fully taken into account, and insufficient attention is paid to forecasting. Consequently, such enterprises and their products are weak in terms of competitiveness in domestic and foreign markets and lose competitive prerogatives and possible profits.

The competitive environment, the risks of foreign markets, fluctuating customer preferences and integration processes in the economy all determine the need for flexible marketing activities. In

particular, scenario for modelling MC helps to reduce the level of uncertainty. The main component for this modelling process is the systematization of current and probable uncertainties associated with the firm's activity. The importance for forming scenarios in MC lies in their use for modelling options for firms' development in the market, creating strategies and making effective decisions.

The creation of a rational MC model currently plays a significant role in developing and increasing a firm's competitiveness in market relations. This paper proposes marketing planning models that focus primarily on external factors and ongoing market processes, as well as their dynamic changes. The advantages of the flexible scenario model for MC planning lie in its client-orientated content and future-orientated activities. The dissertation confirms the significance and efficiency of applying scenario modelling based on the systematization of various approaches to developing MC plans and allocates the composition of marketing scenarios according to their efficiency (Table 1).

3. Characteristics and sectoral analysis in the current state of MC in the context for informatization in the country's economy.

The positive trend caused by the application of modern ICTs in Azerbaijan in recent years has contributed to the strengthening of positive trends in the field of ICTs. The author's comprehensive analysis of the information base of the MC shows that, in general, there are favorable shifts in the main quantitative and qualitative parameters of ICT development. This, in particular, concerns such indicators as the main macroeconomic indicators of information and communication, revenues from information services and communication, key indicators of ICT development in the country and their use, as well as the access of enterprises to the Internet, etc. The author's comprehensive analysis of the ICT information base shows that there are favorable shifts in the main quantitative and qualitative parameters of ICT development.

At the same time, the successes and improvements achieved in the ICT sector should not be overestimated. There are still many problems requiring comprehensive solutions to ensure the success for future marketing activities and communication campaigns.

Table 1

Composition of MC scenarios depending on the degree of its effectiveness

Degree of effectiveness	Scenario	Main objectives	Characterisation MC scenario
High	International	Growth of export potential and expansion of presence in foreign markets	Production of export-oriented products, formation of an exclusive product range; customization of goods; differentiation of pricing strategies by market; creation of joint ventures (projects) with leading companies.
Above average	Innovative	Development and implementation of innovations in all areas of MC	Development and production of innovative products; differentiation of prices and pricing strategies by products, markets, customers, search for a unique market niche and new forms of product sales promotion
Medium	Forecast	Search for ways to improve the firm's competitiveness	Search and development of promising areas of activity; application of benchmarking; analysis of assortment policy, development of new product brands.
Low	Flexible	Orientation on preservation and development of existing market positions	Active monitoring of external and internal environment; conducting marketing research to determine consumer preferences as accurately as possible
Very low	Sustainable	Reorganisation and optimisation	Comprehensive analysis of the external and internal environment; timely organisation of marketing research; application of benchmarking; analysis of the product range and retooling of production; reorganisation of the marketing department.

Source: Compiled by the author

Nevertheless, the prevalence of positive trends in all areas of ICT development in the Republic creates the conditions necessary for expanding MC activities and their integrated forms. In this regard, the dissertation presents several block diagrams for IMC management, covering management technology, the creation of information support, the components of the strategic management system, and feedback.

We believe that the most illustrative example is the block diagram of the components of the IMC strategic management system (Fig. 2).

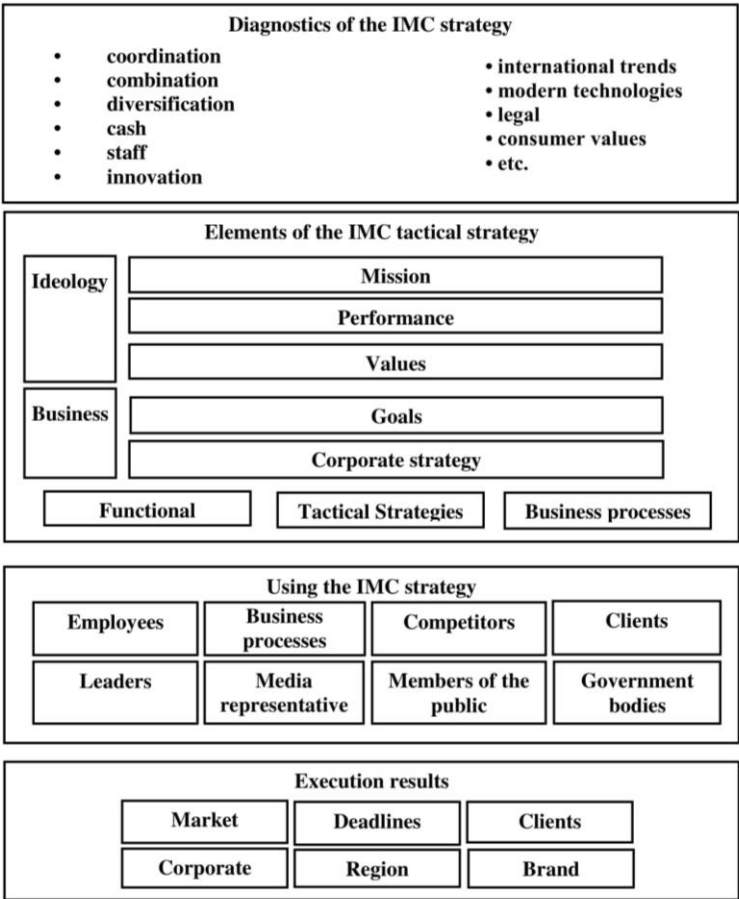


Fig. 2. Block diagram of the components of the IMC strategic management system

Source: Compiled by the author

In the context of intensifying marketing research in the Republic's economic sectors, it is important to analyse the collection and processing of information on economic sectors (trade, public catering, tourism, and paid services) for ICT marketing research. Sectoral analysis has shown that, in recent years, the relevant indicators have improved significantly, creating the necessary information base for active use. Based on this, the author concludes that applying the IMC concept enables retail enterprises to allocate their budget more effectively, maintain stable communication with customers and increase their loyalty. This leads to an increase in product sales and a reduction in total costs. This is particularly relevant for small businesses that cannot make significant investments. Table 2 presents the factors influencing the composition of IMC elements, the stages and content of developing effective forms, and organizational measures for implementation.

Table 2

Development of effective IMC for retail firms

Factors influencing the composition elements of IMC	<ol style="list-style-type: none"> 1. Goals and objectives of the firm. 2. Type of product or market. 3. Characteristics of the consumer audience. 4. Stage of the life cycle of the product. 5. Traditions in the communication policy of the firm. 	
The process of developing-development of effective IMC	Stages	Content
	1. Identification of the target audience	This audience may consist of potential buyers of the firm's products, existing users, decision makers or influencers.
	2. Setting communication objectives	These IMC objectives may be cognitive, emotional or behavioral.
	3. Message development	Requires careful consideration of message content, structure, design and source.
	4. Selecting communication channels.	Communication channels can be personal or non-personal.
5. Determination of the promotion budget.	For its formation you can choose one of four traditional methods: the method of availability, percentage of sales, competitive parity or the method of goals and objectives.	

	6. Drawing up a set of MC.	It is necessary to study the distinctive advantages, cost of each of the tools of the MC complex and the position of the company in the market, as well as to take into account the type of product and market, the readiness of consumers to make a purchase, the stage of the life cycle of the product.
	7. Evaluation of the effectiveness of the complex of MC.	May include surveying members of the target audience on their ability to recall or recognize communications to find out how many times they have encountered them, what specific points they remember, what they think of the MC, and their attitudes towards the product and the firm.
	8. Manage and coordinate the entire MC integration process	Requires an integrated approach to MC planning that recognises the increased value of an integrated approach, where the strategic roles of a variety of communication disciplines are assessed and combined to ensure coherence of individual messages.
Organizational arrangements for implementing embedding the concept of IMC into the practice of retail organizations	<ol style="list-style-type: none"> 1. Creation of a special division of the firm, which will be engaged in development and implementation of IMC. 2. Introduction of a necessary staff unit - a manager on MC, who will control the process of implementation of IMC from the moment of development to the moment of realization. 3. Specifying the functions of this manager, who should carry out planning of the programme of MC integration, control of the work of all specialists of the unit, implementation of external and internal communications, ensuring two-way communication with all participants of the above programme involved in the implementation. 4. providing retraining of communication specialists, raising their qualifications to the required level. 5. Liaising with invited specialists from advertising agencies, if necessary. 6. Introduction of unified financing to eliminate disunity and inconsistency between all structural divisions of the firm on the distribution of budgets. 	

Source: Compiled by the author

4. Evaluating the effectiveness of advertising impact of electronic MC.

Advertising effectiveness is evaluated by many criteria, one of which is the impact of advertising. Despite the sufficient coverage in the economic literature of the issues of determining the effectiveness of advertising impact, the list of these criteria requires further clarification (Table 3).

Table 3

Criteria for determining the effectiveness of advertising appeal

<p>1.The level of attracting attention to the advertising appeal (S_1):</p> $S_1 = \frac{K_1}{K_2}$ <p>Where K_1 is the number of potential customers; K_2 is the total number of potential customers in the advertising area.</p>	<p>2. Level of perception of advertising information (S_2):</p> $S_2 = \frac{K_3}{K_4}$ <p>Where K_3 is the number of potential customers; K_4 is the total number of potential customers on the perception of advertising information.</p>
<p>3.The level of impact of advertising information on potential customers (S_3):</p> $S_3 = \frac{K_5}{K_6}$ <p>where K_5 is the number of potential customers; K_6 is the total number of perceived impact of advertising information on potential customers.</p>	<p>4.Efficiency of expenses for the design of advertising message (Ξ_1):</p> $\Xi_1 = \frac{S_1 \cdot S_2 \cdot S_3 \cdot C_1}{\Xi_1}$ <p>where Ξ_1 is the cost of the design of the advertising message; C_1 is the cost per unit of the advertised product before advertising.</p>
<p>5.The final effect, which is the criterion of the advertising message (S_0):</p> $S_0 = S_1 \cdot S_2 \cdot S_3 \text{ или } S_0 = \frac{K_1 \cdot K_3 \cdot K_5}{K_2 \cdot K_4 \cdot K_6}$	
<p>6.Effectiveness of the cost of the advertisement design (Ξ_2):</p> $\Xi_2 = \frac{S_1 \cdot S_2 \cdot S_3 \cdot C_2}{\Xi_1} = \frac{K_{\text{прт}} \cdot C_2}{K_{\text{нрт}} \cdot \Xi_1}$ <p>where C_2 is the prices of goods generated as a result of advertising.</p>	<p>7. Dependence of the firm's income on the elements that determine the effectiveness of advertising coverage:</p> $\Delta_{\text{пр}} = \varphi(\Delta_{\text{др}}, K_{\text{пра}}, S_0, C_{\tau}, C_p, K_p)$ <p>where $\Delta_{\text{пр}}$ – income after advertising; $\Delta_{\text{др}}$ – income before advertising; $K_{\text{пра}}$ – number of potential customers in the advertising platform; C_{τ} – price of a unit of advertised goods; C_p – cost of transmission of one advertisement; K_p – number of advertisements.</p>
<p>8.Relative income from advertising:</p> $\Delta \frac{\Delta_{\text{пр}}}{\Delta_{\text{др}}} = \varphi(E_{\text{опа}}, S_0, \frac{K_p}{K_{\text{пра}}}, \frac{C_p}{C_{\tau}})$	<p>9.Determination of the economic objective of the criterion of effectiveness of advertising coverage ($E_{\text{опа}}$):</p>

<p>where E_{opa} is the coverage efficiency criterion of the studied advertising platform; $K_p : K_{npa}$ and $C_p : C_T$ are the criteria determining the relative number of advertisements and the relative transmission price of one advertisement on the studied medium.</p>	$E_{opa} = \frac{K_{npa} \cdot S_0 \cdot C_T}{C_p} = K_{npa} \cdot \frac{K_{pnt}}{K_{npa}} \cdot C_T \cdot \frac{K_p}{C_p} \cdot K_p = K_{pnt} \cdot \frac{C_T}{C_p}$ <p>where K_{pnt} is the number of potential customers in the advertising platform.</p>
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Source: Compiled by the author.

This approach indicates that the criterion of effectiveness of advertising appeal is directly proportional to the number of potential customers who after the i -th contact with the advertising appeal decided to purchase the advertised goods, and inversely proportional to the total number of potential customers in the advertising platform.

In the dissertation, specific calculations have been made to assess the effectiveness of advertising appeal on the example of a separate trade enterprise of the republic (supermarket "Meqa Star", Baku). Its results showed that the level of advertising appeal was 0.555, or 55.5%; the level of perception of advertising information – 0.422, or 42.2%; the level of impact of advertising information – 0.155, or 15.5%.

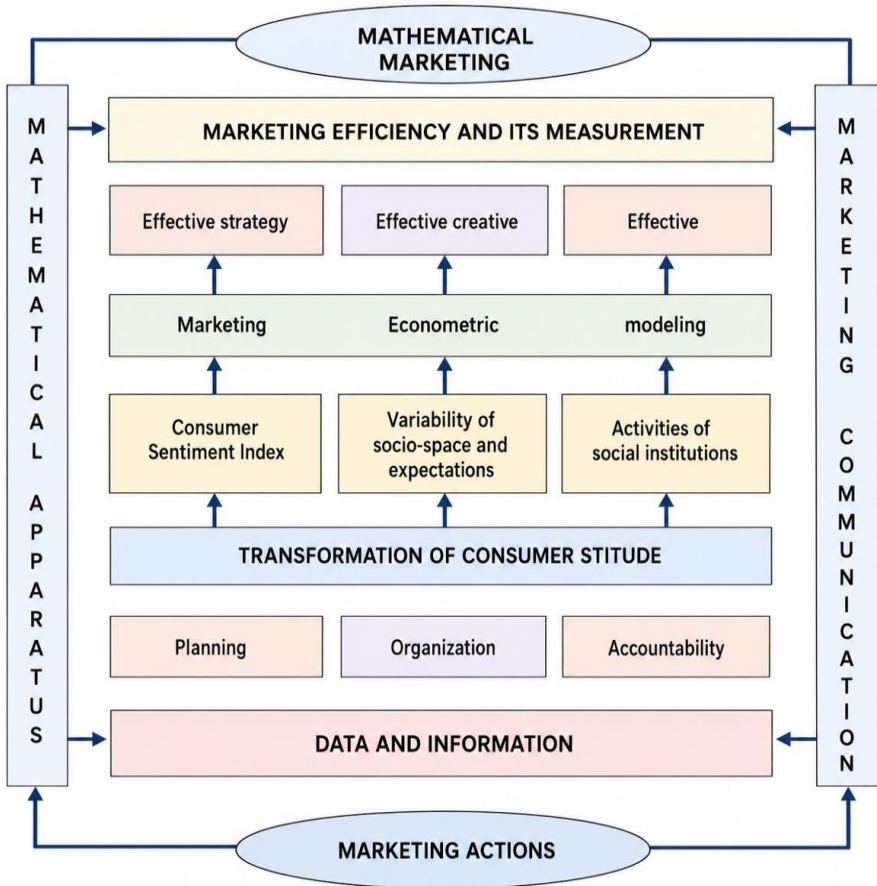
Calculations of the criterion of efficiency of expenses on preparation of advertising message and advertising goods gave the following results. In particular, for E_1 , the criterion was 0.270, or 27.0%, and for $E_{(2)}$ – 0.35, or 13.5%; the level of attracting attention to the advertising message was 0.555, including Internet marketing – 0.325; respectively, the acceptance rate of advertising information – 0.422 and 0.281; the level of impact of advertising information – 0.155 and 0.112; criteria of efficiency of expenses for preparation of advertising message – 0.270; criteria of efficiency of expenses for preparation of advertising message depending on the cost of advertised goods – 0.135.

5. Methodological approaches to the study of MC using the mathematical apparatus are formulated.

Despite the growing interest in the use of mathematical apparatus in marketing developments, today its application is still relatively limited and not yet accepted in everyday marketing decision making. Still many marketers miss this relationship or at least the need to focus on this focus when implementing a marketing plan. In the current

digital environment, the biggest challenge remains translating mathematical ideas into recommendations and actions that can have a direct impact on the formation and functioning of MC. The thesis develops a mechanism for effective interaction between mathematical tools and MC and presents a graphical version of its algorithm (Fig. 3).

Fig. 3. "Roadmap" of effective interaction between mathematical toolkit and MC



Source: Compiled by the author

The following macro-blocks form the basis of this conceptual scheme: MC and mathematical apparatus (the 'vertical framework') and mathematical marketing and marketing actions (the 'horizontal

framework'). The effective interaction of these macro-blocks depends crucially on micro-blocks such as 'marketing effectiveness and its measurement' (first micro-block), 'transformation of consumer attitudes' (second micro-block) and 'data and information' (third micro-block). Each micro-block has its own constituent links. For example, the key links for the first micro-block are "effective strategy" – "marketing actions", "effective creativity" – "econometric modelling" and "effective implementation" – "complex analytics". According to our version, the second micro-block the nodal non-economic factor of this interaction assumes comprehensive, cumulative accounting of the 'consumer sentiment index', 'variability of sociological space and population expectations', and 'activity of social institutions'. The third micro-block is characterized by a systemic connection with important levers of effective marketing, such as 'planning, organization and accountability'.

The digitalization of economic sectors has led to improvements in communication channels. In this regard, interactive IMC, which increases customer loyalty and reduces the cost of handling incoming requests, is of particular interest. This thesis focuses on market segmentation and scoring as key methods of IMC. The mathematical apparatus presented by the author enables IMC to be formalised to a certain extent. To this end, the author proposes using methods such as the 'decision tree' and 'neural network' (elements of market segmentation), as well as 'logistic regression' and 'ROC analysis' (elements of scoring). The author reveals the advantages of each method, the problems that arise when applying them to IMC planning and presents their graphical and econometric representations. We believe that the results obtained can be useful for studying MC. Thus, the thesis demonstrates the relevance and significance of forming marketing policy based on decision tree construction in the modern era. It classifies the problems solved by this approach and presents algorithms reflecting its creation.

In the dissertation, neural network methods representing information transformation are used as a model when studying the IMC. This made it possible to develop a block diagram of a mathematical model of a neuron in the IMC system with the development of a transition of their functions to linear, step-wise, sigmoidal. Each of them received a comprehensive characteristic in the work in relation to this system, and for the study of

the IMC, the author, in particular, chose a step-wise function of a neuron.

Logistic regression occupies a significant place in the methods of research of IMC, the use of which in diagnostics of consumers' response to marketing offer is more significant. It facilitates the realization of binary recall in the form of a continuous function $[y = F(x_1, x_2, x_n)]$. In the thesis, logistic regression for the study of IMC is represented as both a logistic curve and a single-layer neural network. Due to its ordinariness, the above-mentioned regression does not always give accurate results compared to other types of models, but at the same time it is positively interpretable, has a high level of reliability, and the value it predicts is cycle-free. Consequently, this mechanism seems to be the most appropriate for predicting the probability of binary response in MC and their integrated modification.

According to the ROC analysis method used to analyse the quality of binary classification, variants of IMC graphs are possible. In the study conducted by the author, they are made on the basis of this method for such industries as trade and public catering, paid services, tourism.

6. Ways to improve the cost-effectiveness of MC in a sectoral context.

When determining the economic efficiency of the IMC complex in the sectors of the economy, special attention should be paid to the unification of their targets. At the same time, along with economic efficiency (EE), it is important to take into account communication (CE) and social efficiency (SE). The dissertation reveals the peculiarities of determining each of them depending on the target setting, and depending on the goal set, the corresponding indicators are demonstrated. (Table 4).

Table 4

Approaches to determining the effectiveness of IMC depending on the goal setting

CE	EE	SE
Knowledge growth	Gross revenue growth	Customer loyalty
Increase in popularity	Increase in intangible assets	Relationship building with the target audience
Reinforcing purchase intent and direct purchase facilitation	Increase net profit	Involvement of consumers in the process of forming IMC

In order to assess the effectiveness of IMC in trade, it is crucial to

clearly document the process of promoting goods and services based on the proposed technology. In the context of increasing competition in this industry, it is particularly important to summarize the positive experience accumulated here. In this regard, the dissertation thoroughly examines how IMC is applied to commercial enterprises and calculates the impact of its components on customers. The analysis showed that advertising and sales promotion measures are most effective for mass-market goods and least effective for industrial goods. At the same time, PR-related activities are most appropriate for the promotion of mass-market goods with a long service life, while personal sales are an effective communication mechanism for industrial goods. This process can be schematically represented as follows (Fig. 4):

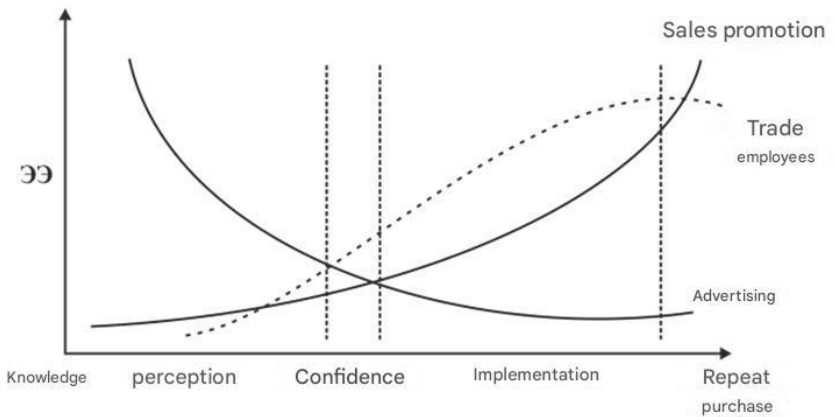


Figure 4. Cost effectiveness of MC mechanisms at the stages of customer's readiness to buy

Taking into account the variety of MC tools available, the dissertation analyses the role of each tool depending on the phase of introducing a product to the consumer market. According to the author, informative advertising and PR are most effective in the preparatory phase, followed by establishing direct contact with the target audience. Finally, when the customer has decided whether to purchase the product, personal selling and sales promotion are the most effective marketing techniques. In accordance with this, a scoring system was developed to evaluate the influence of the

primary MC factors on customers.

Taking the obtained estimates into account, specific calculations were made to determine the economic efficiency of the MC in Azerbaijan's trade sector. To do this, the author used indicators such as the turnover of enterprises over a certain period, the ratio of profit received from additional turnover generated by MC to the actual costs of implementing these measures, and so on. The results are presented in Table 5.

Thus, the research conducted in the dissertation to determine the economic efficiency of IMC at trade and paid service enterprises in the republic for 2015-2023 yielded the following results: the level of growth in additional turnover due to MC increased from 1.5 thousand manats to 2.7 thousand manats; with the help of promotion expenses – from -63.2% to 14.7%; the efficiency of MC costs with the help of the promotion profitability indicator – from -105.3% to 147.0%; the level of achievement of the MC goal – from 32.0% to 96.4% in the pre-pandemic period and its decline to 68.7% in 2020, as well as the growth of this indicator in 2023 to 79.7%; the economic efficiency of promotion indicator – from 26.3 thousand manats to 86.0 thousand manats.

Similar calculations carried out by the author for tourism and catering enterprises gave the following results:

- Over the period 2015-2020, the economic efficiency indicator of a communications company, depending on the volume of sales and MC expenses, steadily declined from 122.45 manat to 69.87 manat, followed by growth over three years to 100.36 manat in 2023.

- Prior to COVID-19 (2015–2016), there was an increase in economic efficiency based on investment analysis (ROI) from 129.5% to 178.7%. In subsequent years, during the coronavirus pandemic, it fell significantly to 59.5%, with a further three-year increase to 142.5% in 2023.

- Increase in daily profit depending on price and communication signals from 5.0 manat to 57.2 manat in 2015-2023.

**Calculations on determination of economic efficiency of IMC
in trade of the Republic of Azerbaijan**

Table 5

Using daily expenditure indicators									
$\Theta = (T_d \times H_m) / 100 - (3_p + P_i)$									
Indicators	2015	2016	2017	2018	2019	2020	2021	2022	2023
Economic effect (profit) of promotion (Θ)	-63,2	-25,0	-9,2	26,5	21,6	24,5	25,7	14,6	14,7
Additional turnover under the influence of the promotion company (T_d)	1527,1	1829,4	2063,1	2205,8	1969,3	2235,4	2519,9	2676,5	2727,7
Trade mark-up per unit of goods (H_m), %	1,1	1,2	1,2	1,2	1,2	1,1	1,1	1,2	1,2
Promotional expenses (3_p)	60,0	30,0	20,0	10,0	12,0	15,0	17,0	10,0	10,0
Additional costs of turnover growth (P_i)	20,0	17,0	14,0	10,0	10,0	12,0	15,0	7,5	8,0
Using the promotion profitability indicator (%)									
$P = (\Pi \times 100) / 3$									
Promotion profitability (P), %	-105,3	-83,3	-46,0	265,0	180,0	163,3	151,2	146,0	147,0
Profit from promotion of goods (Π)	-63,2	-25,0	-9,2	26,5	21,6	24,5	25,7	14,6	14,7
Expenditure on implementation of MC (3)	60,0	30,0	20,0	10,0	12,0	15,0	17,0	10,0	10,0
Determining the level of achievement of the MC goal (%)									
$\Theta = (\Pi_{\Phi} - 3) \times 100 / (\Pi_0 - 3)$									
Level of achievement of MC goal (Θ), %	32,0	85,1	90,1	96,4	75,0	67,0	88,9	83,3	79,7
Practical change in the volume of income over the period of the MC (Π_{Φ})	63,2	76,8	87,6	96,8	85,5	78,7	90,8	97,5	99,3
Planning of change in revenue volume over the MC period (Π_0)	70,0	85,0	95,0	100,0	110,0	110,0	100,0	115,0	122,0
Expenditure on promotional activities (3)	60,0	30,0	20,0	10,0	12,0	15,0	17,0	10,0	10,0

Determination of economic effect of long-term communication activities*, (manat, daily indicators) EE= Td (Ir-I)·B·H / 100·Zr									
Economic effect of promotion (EE)	26388,7	34253,8	38957,6	64027,1	49594,5	50566,9	68199,0	77954,3	859,4
Additional turnover (Td)	1527,1	1829,4	2063,1	2205,8	1969,3	2235,4	2519,9	2676,5	272,1
Increase in the index of average annual turnover at the expense of MC (I _p -I)	0,582	0,499	0,435	0,641	0,553	0,511	0,560	0,530	0,5
Average daily turnover before MC (B)	2699,2	3132,5	3623,2	3777,1	3799,7	4029,3	4397,4	4583,1	482,1
Trade margin on promoted goods after MC (H), %	1,1	1,2	1,1	1,2	1,2	1,1	1,1	1,2	1,1
Sum of expenses for MC (Zr)	60,0	61,0	62,0	59,0	61,0	62,0	60,0	60,0	59,0

Source: Calculated by the author on the basis of the data of the State Statistics Committee of the Republic of Azerbaijan

Tab 5

Strategic scorecard of IMC performance indicators

Balanced Scorecard System (BSC)	Strategic				Analytical	
	Corporate strategy	Communication strategy		Complex MC		
		Company	Clients	Firm	Clients	
Consumers	Style	Variety	Foreign brands	Service	Skill developm	
Investments and innovations	Savings	Quality	EFFICIENCY	Infrastructure	Banking operati	
Investments	Environment environment	Application of experience	Appearance of solar technology	Service	Stability	
Internal business processes	Competitiveness of business processes	Regional market, product breadth, efficiency of work with custom efficiency of feedback, quality of work with customers, customer audit				
Funds	Income	ROS – return on sales, distribution costs		Profit, costs	ROMI, ROIMI	

- A decrease in the communication message indicator from 1.857 to 1.675 and the consumption engagement indicator from 30.0 to 23.0 between 2015 and 2023.

According to the author, among the methods for assessing the effectiveness of the MC complex in this group of industries, the Balanced Scorecard System (BSS) is often used, which allows for an optimal connection between the corporate and communication goals of the company and its resource component. In line with this, the dissertation presented two options for using the BSS in an IMC process and identified the reasons for its effectiveness as a MC tool.

The dissertation draws a scientifically sound conclusion about enterprises' ability to use the BSS for IMC purposes, depending on the level of MC development in three areas: formalizing the IMC strategy, tactical MC coordination, and its use as a MC component. Table 6 presents BSS efficiency indicators that can be applied at individual levels. All indicators are classified by type and focus on the strategic perspective.

CONCLUSION AND RECOMMENDATIONS:

The dissertation offers a generalized theoretical framework and a comprehensive solution to the current scientific issue of the formation, development and management of IMC in the information society using ICT. The main results of the study enabled the following conclusions to be drawn:

1. Theoretical and methodological provisions related to the formation and development of MC in modern conditions have been developed from the perspective of the informatics of society and the digitalization of the economy. Thus, the phenomenon of the information society and its impact on the transformation of MCS are considered in depth. The concepts of “IMC” and its derivatives, which have evolved in economic theory and marketing science, have been refined and expanded, and the most frequently used building blocks of these communications have been identified in the context of the prevalence of the latest information technologies. The features and strategic aspects of IMC development have been systematized. Based on this, a block diagram of the conceptual model of MC and its scenarios depending on the degree of MC effectiveness has been developed.

2. The characteristics of IMC identified in this study suggest that it is a more complex category than MC, occupying a unique position within the market information and digital landscape. This specific position includes the following trends: a new leadership ratio forming in the MC market; structural changes to the components of the IMC strategic management system; the redistribution of IMC development stages and phases; new conceptual IMC system models forming in modern enterprises from a systematic perspective; modern IMC algorithm development and implementation; and the radical restructuring of IMC structures in connection with the digitalization of the economy, alongside an adequate transformation of the methodology for justifying them.

3. Considering the development of IMC in the information society, the author proposes a new approach to planning and modelling, primarily manifesting in the following areas:

- mandatory comparative characteristics of existing and promising IMC modelling processes;
- the development of strategy matrices for advertising companies when forming systems for selling goods and services;
- determining the proportionality of using MC to promote goods and advertising services;
- emphasis on the three-level IMC model;
- the development of IMC models in market areas such as labor resources, services, social networks, trade and other economic sectors.

4. The latest ICTs used in Azerbaijan in recent years have led to positive trends in the field of MC. Overall, positive shifts have been observed in the main quantitative and qualitative parameters of development. An analysis of the current state of MC and the factors affecting its effectiveness has revealed significant potential for improvement in this area. Implementing these improvements will enhance the quality of IMC management and the transparency of the process, while also maintaining stability, reliability, and healthy competition in the business environment.

5. The author's calculations showed that the effectiveness of MCS for enterprises in the modern information society largely depends on intensive advertising exposure to the target audience in

both online and offline environments. The above-proposed criteria and indicators for assessing the effectiveness of this impact will enable domestic enterprises to analyse the results of their activities more effectively after implementing MCS using modern ICT. Azerbaijani enterprises can use this to increase the effectiveness of their marketing activities, strengthen their competitive position, facilitate entry into new markets and influence the behaviour of existing and potential target audiences.

6. The dissertation sets out a roadmap for the effective interaction between mathematical tools and MC, emphasizing the macro- and micro-elements of this conceptual framework. The effective connection of these blocks through inclusive access to data and information significantly determines the effectiveness of marketing and the transformation of consumer sentiment. At the same time, it provides a comprehensive, cumulative account of consumer sentiment indices, sociological space variability and population expectations, as well as social institution activities. The conceptual framework pre-sented for the mechanism of effective interaction between mathematical tools and MC largely reveals the algorithm for constructing this model within the context of industry specifics and possible target constraints.

7. The methodological approaches to calculating the comprehensive economic efficiency of IMC considered in the dissertation justify the advisability of each enterprise developing a similar strategic map of efficiency. This will undoubtedly increase the effectiveness of marketing activities within enterprises and strengthen their competitive position in existing markets. It will also contribute to improving the efficiency of entrepreneurial activity in general.

The main content of the dissertation has been reflected in the following published works:

1. Some aspects of the use of innovative business models of enterprise development: foreign experience // Investment: practice and experience (Kyiv, Ukraine), 2017, No. 22, pp. 61-64 (0.6 p.s.).
2. Development of marketing communications of enterprises in the conditions of information society / Management, marketing, business: problems and prospects of development: a collection of theses of scientific works of participants of the All-Ukrainian scientific-practical conference (Odessa, June 13, 2020). Odessa: State Enterprise "Centre for Economic Research and Development", 2020, pp. 6-8 (0.1 p.s.).
3. Marketing communications: research methodology using mathematical apparatus / From the Baltic to the Black Sea: the formation of modern economic area: IV International scientific conference (August 21, 2020. Riga, Latvia). Riga, Latvia: Publishing House "Baltija Publishing", 2020, pp. 1-5 (0,1 p.s.).
4. Integrated planning and modelling of marketing communications / Aspects of the development of the financial and economic system of the state and regions: a collection of abstracts of scientific works of participants of the International scientific and practical conference for students, graduate students and young scientists (Kyiv, July 31, 2020). Kyiv: Analytical Centre "New Economy", 2020, pp. 83-87 (0.2 p.s.).
5. Integrated marketing communications and their strategic orientation / Problems of economics and management: evaluation and prospects of solution: Proceedings of the international scientific and practical conference (Lviv, June 20, 2020). Lviv: State Enterprise "Lviv Economic Foundation", 2020, pp. 49-52 (0.1 p.s.).
6. Electronic marketing communications and calculation of the effectiveness of advertising impact / Economic problems of modernity and strategies of innovative development of national economy: Proceedings of the international scientific and

- practical conference (Lviv, August 22, 2020). Lviv: State Enterprise "Lviv Economic Foundation", 2020, pp. 62-67 (0.2 p.s.).
7. The issue on some econometric aspects of marketing communications research methodology // Investment: practice and expertise (Kyiv, Ukraine), 2022, No. 17, pp. 56-61 (0.5 p.s.).
 8. Marketing communications in the modern conditions: issues of theory // Economy and State (Kyiv, Ukraine), 2022, No. 9, pp. 63-68 (0,7 p.s.).
 9. Integrated marketing communications: features and strategic focus // Efektivna ekonomika (Kyiv, Ukraine), 2022, No. 9, 17 pp. (0,7 p.s.).
 10. Integral marketing communications: the state of information base and management in Azerbaijan // Economic Growth and Social Welfare (Baku, Azerbaijan), 2022, No. 3, pp. 58-75 (0.6 p.s.).
 11. Quantitative assessment of economic efficiency of integrated marketing communications: methodological aspects // Economic Growth and Social Welfare (Baku, Azerbaijan), 2022, No. 4, pp. 10-26 (1.0 p.s.).
 12. Current problems of formation and development of marketing communications in modern conditions / Economics, finance, banking and education: topical issues of development, achievements and innovations: proceedings of the VIII International Scientific and Practical Internet Conference (Odessa-Ostrava, April 6-7, 2023). Odessa-Ostrava: ONEU-EIID, 2023, pp. 80-84 (0,2 p.s.).
 13. Economic and mathematical apparatus in marketing communications research // Features and problems of implementing economic reforms in Azerbaijan, 2026, No. 1, pp. 407-424. (1,1 p.s.).



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