THE WORLD OF SCIENCE AND INNOVATION

PROCEEDINGS OF IX INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE
APRIL 7-9, 2021

LONDON
2021

THE WORLD OF SCIENCE AND INNOVATION

Proceedings of IX International Scientific and Practical Conference

London, United Kingdom

7-9 April 2021

London, United Kingdom

2021

<div align="center">

Editor
Komarytskyy M.L.
Ph.D. in Economics, Associate Professor

</div>

Collection of scientific articles published is the scientific and practical publication, which contains scientific articles of students, graduate students, Candidates and Doctors of Sciences, research workers and practitioners from Europe, Ukraine, Russia and from neighbouring coutries and beyond. The articles contain the study, reflecting the processes and changes in the structure of modern science. The collection of scientific articles is for students, postgraduate students, doctoral candidates, teachers, researchers, practitioners and people interested in the trends of modern science development.

e-mail: london@sci-conf.com.ua

homepage: ***https://sci-conf.com.ua***

TABLE OF CONTENTS

MODELS OF MARKETING COMMUNICATION COSTS EFFECTIVENESS EVALUATION

Pilko Andriy

Candidate of Economic Sciences, Associate Professor

Trukhym Liliia

Student

Vasyl Stefanyk Precarpathian National University

Ivano-Frankivsk, Ukraine

Abstract. The article considers the main approaches to the interpretation and evaluation of the effectiveness of cost management of marketing communications. The main factors that can determine the effectiveness of management of the marketing communications system of the enterprise were identified. The system of indicators of estimation and the analysis of efficiency of management of marketing communication process of the enterprise was formed. A comparative analysis of the results of the application of three alternative approaches to the problem of the marketing communications cost effectiveness solution were provided.

Key words: marketing communications; model; efficiency; costs.

Introduction. The consequences of the global financial and economic crisis, exacerbated by quarantine restrictions, have outlined the new conditions which businesses should operate. The new realities are characterized by both sporadic and systemic reductions in the purchasing power of the population and the deterioration of financial and economic performance of enterprises. This led to a decrease in consumption of almost all types of products, without exception, both consumer demand and industrial use.

The peculiarity of the current situation is that it is typical for all countries of the world without exception and is determined by the formation of extremely careful

consumer behavior of economic entities. The decrease in demand for products and services of enterprises of various types of economic activity leads to a corresponding reduction in business activity and an increase in overt and covert unemployment.

Aim. The purpose of the study is to improve existing approaches to assessing the effectiveness of the management of enterprise marketing communication system.

In order to achieve this aim, the following tasks were set and solved:

- a system of indicators that should be evaluated and analyzed in the process of evaluating the effectiveness of marketing communications management was formed;

- using the possibilities of econometric modeling, the level of efficiency of management of the marketing communications system of the investment company is assessed using three alternative approaches.

Materials and methods. The information base of the study is articles in periodicals on marketing management and marketing communications, in particular, monographs of domestic and foreign scientists, accounting data and internal information about the financial and economic activities of the investment company.

Theoretical and methodological bases of the thesis are scientific works of domestic and foreign scientists in the area of marketing management, economic analysis and econometric modeling.

Results and discussion. Taking into account the scientific results obtained by the authors [1], the effectiveness of marketing communications will mean the impact of marketing communications on obtaining certain target results in a given time interval, taking into account internal and external factors of the enterprise, measured by the effects (economic and communicative) and the costs for achieving them.

The effectiveness of the use of marketing communications system can be assessed both from the point of view of the enterprise and from the point of view of consumers. From the company's point of view, efficiency can be assessed through the formation of a positive image in the eyes of the public, increasing market share, increasing profits, increasing profitability and more. From the point of view of the target audience, the effectiveness can be assessed through the level of awareness,

receipt of goods and services of the desired quality and range, commitment to the products of a particular manufacturer, outlet, brand [2].

As noted by the authors [3, p.112], an important step that precedes the direct evaluation of the effectiveness of communication policy is the development of principles, taking into account it will be implemented.

It is recommended to measure the nature of the impact of marketing communications on the indicators of financial and economic activity of the enterprise on the basis of modeling the reaction of the market and the target audience to appropriate activities. This involves the use of both static and dynamic models. In his work L.F. Romanenko [4] recommends to use the following indicators to assess the effectiveness of marketing communications: profit growth after the introduction of marketing communications, the increase in brand value after the introduction of marketing communications, the total number of views of advertising and more.

The vast majority of existing methods of assessing the effectiveness of marketing communications is aimed at assessing the effect after the information campaign and, unfortunately, does not allow to identify potential deviations from the expected or planned indexes. As a possible way out of this situation in [5] proposed a very original approach to determining the levels of economic efficiency (or security) of the marketing communications system of the enterprise.

The following activities are proposed to use under this approach:

1. measuring the actual level of efficiency of the marketing communication system channel;

2. determination of security levels in each individual reporting period and grouping the channels by security level based on the weighted Euclidean distance.

Given all the positive aspects of this approach, it remains somewhat problematic to use due to the lack of information on individual values of the system of indicators at the international level. Such information can potentially be obtained by referring to the results of research by leading consulting firms.

As a rule, the evaluation of the effectiveness of the costs of marketing communications is carried out with the following purpose:

- identification of the nature of the impact of marketing communication policy on the indicators of financial and economic activity of the enterprise and the target audience of the enterprise;

- assessment of the level of compliance of the goals and objectives of marketing communication policy with short- and long-term goals of the enterprise.

- quantitative and qualitative assessment of the communicative or informational effect of marketing communications on the target audience, the level of its coverage, changing the attitude of the target audience to the enterprise, its products and services;

- identification of discrepancies between expected or planned and actual costs of marketing communications, ie identification of possible increases in the expenditure side of the marketing budget;

- quantification of the effectiveness of investing in the system of marketing communications for a certain period or in the dynamic.

The effectiveness of marketing communication activities depends on:

- the size of the budget for the development of marketing communications;

- thoughtfulness of specific measures of information impact and approaches used to form the structure of the expenditure part of the budget of marketing communications;

- the level of professionalism and adequacy to the goals of communication;

- features of the target audience and its reaction to communication appeals;

- taking into account the possible seasonal nature of demand for the company's products in the calendar of investments in marketing activities and media planning.

In [5] a possible approach to the problem of assessing the level of management of the marketing communications system in the context of ensuring an adequate level of economic security of the communications system and the enterprise as a whole.

According to this approach, it is necessary to do the following:

1. identify cost items, investing in which, other things being equal, will increase the value of cost and in-kind indicators of enterprise efficiency (profit, turnover, physical turnover) in excess of the cost of specific items of the budget of marketing communications, taking into account the planned profitability of operations;

2. determine the use of the budget of marketing communications, which, other things being equal, will increase the value of value and in-kind indicators of turnover and profit in amounts that do not cover the costs of specific budget items, taking into account the planned profitability of operation;

3. determination of the actual level of efficiency of the channel of the marketing communication system;

4. determination of security levels of each individual communication channel for each analyzed period and grouping the channels by security level [5, p.15].

In the process of evaluating the effectiveness of marketing communications management, it is important to determine the criterion of effectiveness. In particular, if such a criterion is informing consumers, the criterion of effectiveness will be the level of awareness of the target market about the company, its products and services. Quantitatively, this effect can be measured by time series analysis, the final stage of which is the calculation of the communication effect as the difference in the level of awareness before and after the end of the advertising campaign.

If the purpose of marketing communications is to form a sense of superiority, the criterion of effectiveness will be the level of loyalty of the target market to the company, its products and services. As a rule, such an analysis of the degree of loyalty of the target audience is based on the construction and analysis of cognitive maps. Similarly, as in the first case, the quantitative effect can be calculated as the difference in relation to the company, its products and services before and after the end of the advertising campaign. Finally, when the purpose of marketing communication policy is to stimulate the purchasing activity of the target audience,

the criterion for the effectiveness of marketing communications will be the dynamics of turnover and physical turnover.

To assess the economic efficiency of the marketing communications system, one often use such indicators as:

- increase in sales in kind and value, which is achieved through investment in marketing communications for a certain period;

- the ratio of the magnitude of sales growth in value and in kind, which was obtained through investment in marketing communications, to the amount of invested funds;

- the ratio of the amount of profit received as a result of investing in marketing communications to the amount of relevant investments;

- increase in sales for the period after the start of the marketing policy of the enterprise;

- comparison of the dynamics of the level of costs for marketing communications and sales;

- the ratio of the number of purchases of goods, the promotion of which was aimed at communication policy, to the total number of purchases [5, p.15].

To evaluate the cost-effectiveness of marketing communications as a whole and in terms of individual cost items, one can offer at least 3 alternative approaches:

1 evaluation performance based on the calculation of the return on marketing investment ROMI (return on marketing investment);

2. assessment of the angular coefficients of the forms of analytical dependences of the company's profit on the cost of marketing communications as a whole and in terms of individual cost items;

3. construction of dynamic econometric models of dependences of the company's profit on the costs of marketing communications as a whole and in terms of individual cost items, taking into account the lag effect of changes in economic conditions with subsequent calculation of intermediate and long-term distribution-lag multipliers.

Let's consider in more details each of the proposed approaches.

1. The rate of return on marketing investment or ROMI (return on marketing investment) is used when there is a need to calculate the impact on the company's income not all investments (as in ROI (return on marketing investment), but only those aimed at intensifying efforts associated with the promotion of enterprise product. The value of the ROMI indicator is calculated by the formula (1):

$$ROMI = \frac{Income - Marketing\ Cost)}{Marketing\ Cost} \qquad (1)$$

The main advantages of using the ROMI indicator are the simplicity of calculation and the ability to obtain information about the return on marketing investments for each analyzed reporting period, rather than for the entire interval.

Among the disadvantages of this approach could be mentioned the following: this indicator takes into account only the immediate effect of marketing investments on the amount of enterprise income. However, the lag effects of changes in economic conditions are virtually ignored. In other words, when evaluating the effectiveness of marketing investments only on the basis of the calculated values of the ROMI indicator, long-term investment projects can be mistakenly not taken into account.

2. Estimation of angular coefficients of forms of analytical dependences of the size of profit of the company on expenses for marketing communications as a whole and in a cut of separate articles of expenses.

This approach involves a correlation-regression analysis of the dependence of income or profits of the company on the amount of costs for marketing communications.

According to this approach, for the actual distribution of enterprise income and expenses on individual items of marketing communications, a form of analytical dependence is selected, which best describes this relationship, taking into account the requirements of mathematical, logical and economic compliance for the analysis period and forecast period.

The advantage of this approach is the relative ease of use. The disadvantages are the following:

- to obtain comparable results it is necessary to reduce all the actual distributions to some one agreed form of analytical dependence, which is not always possible;

- even if it is possible to reduce the relevant data to the functions of some one type (linear, power, exponential or logarithmic), the angular coefficients in some models may not be statistically significant, which makes it impossible to obtain a scientifically sound estimate of the cost-effectiveness of marketing communications;

- this approach also does not take into account the possible lag impact of changes in economic conditions, which is very important in the process of managing the marketing communication process;

- values of angular coefficients allow to draw a conclusion about profitability according to the communication channel only for all period of the analysis. At the same time, obtaining relevant information in each analyzed period remains an open question.

3. construction of dynamic econometric models of dependences of the value of the company's profit on the costs of marketing communications as a whole and in terms of individual cost items taking into account the lag effect of changes in economic conditions with subsequent calculation of intermediate and long-term distribution-lag multipliers.

Among the advantages of this approach is the ability to calculate the level of efficiency of marketing communications channels, taking into account the lag effect of changes in economic conditions. That is, you can see what will be the immediate effect of investing in the communication channel (ie the effect during the investment period), the effect on the next period, as well as the total effect for all periods of impact of the marketing message on the target audience. Among the disadvantages or difficulties of using this approach is the previous uncertainty of the duration of the lag of changes in conditions, as well as the need for somewhat more complex

calculations associated with the construction and analysis of appropriate dynamic econometric models.

Thus, to assess the effectiveness of the channels of the marketing communications system, 3 approaches described above were used.

To assess the effectiveness of management of communication policy of the enterprise, we proposed the use of a system of indicators of costs for marketing communications channels for 24 reporting periods (quarterly data from the company for 2015-2020. Based on information about the use of communication channels, the following array of factors was formed: X_1- advertising costs in the print media (newspapers, magazines); X_2- the cost of online advertising; X_3- costs of advertising on television and radio;X_4- costs of services for the production of promotional product; X_5- costs of outdoor advertising (boards, city lights); X_6- costs for distribution advertising products; X_7- other costs associated with promotional activities. The resulting variable is sales revenue in monetary terms (Y).

The use of the first approach, namely the calculation of the indicator of return on marketing investments for 2015-2020 in quarterly terms allowed to determine the average values of this indicator and rank the relevant channels according to the corresponding value.

The application of the second approach, which is based on the selection of forms of analytical dependencies that could describe the relationship between the cost of individual communication channels and the results of the enterprise (income indicators) in the best way and comparing the values of the corresponding angular factors in the models also yielded results. In particular, it was found that the best correlations between investment in communication channels and enterprise income can be described using exponential models (6 of the models of this type were adequate with statistically significant angular coefficients)

An attempt to simultaneously approximate the dependence of income on the cost of communication channels in all seven sets to other forms of dependence (linear, power, logarithmic, quadratic, etc.) did not yield such results. It should be noted that polynomial models were not considered for consideration due to the abrupt

nature of changes in the studied indicator outside the analyzed period. The following models (2) - (8) with the values of the coefficients of determination were obtained:

for X_1 channel: $\qquad Y = 2,5 \times 10^6 \times 1,000007^x; \quad R^2 = 0,6735;$ $\qquad$ (2)

for X_2 channel: $\qquad Y = 2,7 \times 10^6 \times 1,000007^x; \quad R^2 = 0,7824;$ $\qquad$ (3)

for X_3 channel: $\qquad Y = 2,8 \times 10^6 \times 1,000008^x; \quad R^2 = 0,6924;$ $\qquad$ (4)

for X_4 channel: $\qquad Y = 2,2 \times 10^6 \times 1,00002^x; \quad R^2 = 0,8123;$ $\qquad$ (5)

for X_5 channel: $\qquad Y = 2,9 \times 10^6 \times 1,00002^x; \quad R^2 = 0,6321;$ $\qquad$ (6)

for X_6 channel: $\qquad Y = 4,2 \times 10^6 \times 1,000004^x; \quad R^2 = 0,6763;$ $\qquad$ (7)

for X_7 channel: $\qquad Y = 3,7 \times 10^6 \times 1,00001^x; \quad R^2 = 0,2549.$ $\qquad$ (8)

The results obtained by these two methods are somewhat different. As already mentioned, due to certain shortcomings, these methods will have limited practical application in our study, and their results will be advisory and recommendatory.

The use of the third approach involves the construction of dynamic, namely, distribution-lag econometric models with the calculation of intermediate and distribution-lag multipliers. Distributive-lag model is an econometric model, in the right part of which there are not only current but also previous (lag) values of independent (factor) variables:

$$y_t = \alpha + \beta_0 \chi_t + \beta_1 \chi_{t-1} + \beta_2 \chi_{t-2} + ... + \beta_n \chi_{t-n} + e_t \qquad (9)$$

Two approaches were used to preliminarily determination of the maximum lag duration: the calculation of the values of pairwise correlation coefficients between the resulting variable and the factor variable and the lag values of the factor variable, respectively, and the Alt-Tinbergen method. It should be noted at once that this two approaches showed almost identical results.

Distribution-lag models should include:

1.for a model that describes the relationship between the cost of advertising in the print media (newspapers, magazines) and company revenue - one lag variable;

2. for a model that describes the relationship between the cost of online advertising - two lag variables;

3. for a model that describes the relationship between the cost of television and radio advertising and the company's revenue - no lag variable (there is only an instantaneous relationship);

4. for a model that describes the relationship between the cost of services for the production of advertising and presentation materials and company revenue - one lag variable;

5. for a model that describes the relationship between the cost of outdoor advertising (boards, city lights) and company revenue - one lag variable;

6. for a model that describes the relationship between the cost of handouts and company revenue - one lag variable;

7. for a model that describes other costs associated with promotional activities and company revenues - one lag variable.

The distribution-lag models of dependence of the company's income on the expenses for the corresponding channels of promotional activity, estimated by the method of Sh. Almon, have the following form:

1. model of dependence of the company's income on advertising expenses in the print media (newspapers, magazines):

$$y_t = 328432 + 11{,}8356X_t - 7{,}2324X_{t-1};\ R^2 = 0{,}833;\quad (10)$$

2. model of dependence of the company's income on the costs of Internet advertising:

$$y_t = 2953474 + 7{,}2911X_t - 1{,}7792X_{t-1} + 1{,}0363X_{t-2};\ R^2 = 0{,}735;\quad (11)$$

3. model of dependence of the company's income on the amount of advertising costs on television and radio: $y_t = 374118 + 2{,}2456X_t; R^2 = 0{,}112;\quad (12)$

4. model of dependence of the company's income on the cost of services for the production of advertising materials:

$$y_t = 325657 + 33{,}1468X_t - 8{,}3009X_{t-1}; R^2 = 0{,}963;\quad (13)$$

5. model of dependence of the company's income on the costs of outdoor advertising:

$$y_t = 204980 + 2{,}3771X_t + 35{,}1172X_{t-1}; R^2 = 0{,}851;\quad (14)$$

6. model of dependence of the company's income on the costs of handout advertising products: $y_t = 328622 + 3{,}8520X_t + 6{,}6816X_{t-1}; R^2 = 0{,}921;$ (15)

7. model of dependence of the company's income on other expenses related to promotional activities: $y_t = 323154 + 7{,}1532X_t - 0{,}7512X_{t-1}; R^2 = 0{,}861$ (16)

The calculated values of the coefficients of determination indicate that 6 out of 7 constructed models are adequate, which allows us to make conclusions about the possibility of applying this approach in the practice of evaluating the cost-effectiveness of marketing communications. The cumulative effect of the cost of marketing communications on the financial results of the enterprise was also calculated. The cumulative effect was determined using long-term distribution-lag multipliers calculated on the basis of previously estimated dynamic econometric models. As the results of the calculation of long-term distribution-lag multipliers show, all marketing communication channels without exception are profitable and investment-attractive for the enterprise. But given the value of the calculated ROMI ratios, the company's management needs to determine the priority of the choice of marketing communications channels for investment. As we can see, the results of applying three different approaches give slightly different results. Given that one of the best tools for estimating and analyzing marketing costs is to conduct a marketing audit [6, 7], the priority for building a model audit of marketing communications budget, in our opinion, is to apply the results of the third approach for reasons that have already been considered previously.

Conclusions. Summarizing some of the recommendations about how to improve the management of marketing processes through systematic evaluation of the effectiveness of marketing communication process with extensive use of economic and mathematical tools, it should be noted that this area of applied interdisciplinary research is extremely promising today. Application of economic and mathematical methods and models in the practice of evaluating and analyzing the effectiveness of marketing process management avoids subjectivity and shortcomings that carry expert methods in assessing the performance of the enterprise. Experience shows that the results of the analysis of the effectiveness of cost management of

marketing communications, practical recommendations for improving the management of marketing communication process could be practically useful if they were developed using formalized procedures.

REFERENCES

1. Huz' M.M. Analysis of the communication impact of marketing programs on consumers in the process of assessing the effectiveness of management of marketing communications of banking operations. Naukovyy visnyk Natsional'noho hirnychoho universytetu. – Dnipropetrovs'k, 2010. № 2. p. 95-98. (in Ukrainian).

2. Ivashova N.V., Goncharenko T.P. Modern approach to the formation of the system of communications of an industrial enterprise. Visnyk Ukrayins'koyi akademiyi bankivs'koyi spravy. 2011. № 1. p. 120–126. (in Ukrainian).

3. D.Shtefanych, O.Dyachun Estimation of efficiency of communication policy of the enterprise. Visnyk TNEU. 2014. №3, p. 111-121. (in Ukrainian).

4. Romanenko L.F. Marketing communications and evaluation of their effectiveness. Naukovyy visnyk Khersonskoho derzhavnoho universytetu. Seriya Ekonomichni nauky. Vypusk 21. Chastyna 2. 2016. p.96-98. (in Ukrainian).

5. Pil'ko A.D. Model of evaluation of efficiency of management of system of marketing communications of the enterprise. Modelyuvannya rehional'noyi ekonomiky. 2010. № 2. p. 13-24. (in Ukrainian).

6. Khablyuk O., Yatsyshyn S., Golyash I. Marketing audit as a tool for assessing business efficiency Halyts'kyy ekonomichnyy visnyk. 2019. No 5 (60.) p.129-126. (in Ukrainian).

7. P.Hadrian The various models of marketing audit / Marketing of scientific and research organizations, 2020, Vol. 37, Issue 3, p. 51–72. (in English).