Joint analysis of IMC resources: value for sustainable development

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Abstract. The article studies issue of the optimal structure of the IMC (integrated marketing communications) budget in order to improve the sustainability of the company's development. Authors propose the original technique for the most optimal resource allocation structure based on the joint analysis procedure. This statistical method considers indicators of relative importance of attributes and related utilities. Particular attention is paid to the issues of assessing the reliability of the joint analysis results, as well as the possibility of their visualization. In addition, the article also considers the technology for visualizing the results and approaches to interpreting the obtained data. The main approaches to assessing the reliability of research data are presented, with special attention to joint analysis criteria.

1 Introduction

The marketing policy of an enterprise in modern conditions is based on a rather serious use of the system for promoting goods and services, which includes various means of marketing communications. Marketing communications include such means of promotion as advertising, sales promotion, PR, personal selling, and so on.

Integrated marketing communications (IMC) can be viewed as a whole range of means, tools, technologies for influencing the consumer within the framework of a synthesis of various approaches.

F. Kotler identifies five approaches (concepts) to marketing management, the relevance of which is observed to this day: the concept of production improvement; the concept of product improvement; the concept of intensifying commercial efforts; marketing concept; the concept of social and ethical marketing [1].

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A somewhat different view on the classification of approaches to marketing management is found in the authors of the textbook "Modern Marketing" D. Kurtz and L. Bun [2]. The classification is based on historical periods:

- Era of production – a good product can sell itself (Before 1925);
- Era of sales - to convince the client that he needs this product (From the 1920s to the 1950s);
- Age of Marketing – integration of marketing with every phase of the business (from 1952 to the 1990s);
- Era of relationships – cooperation and partnership between all stakeholders. Definition of the concept of "communication", in the context

IMC assumes that between the end buyer and the seller there is an exchange of information of a specific content. The term "marketing" defines the specifics of the means and instruments through which the exchange takes place.

In turn, the concept of "integrated" explains the basic principles of the implementation of the BCI, since it implies a certain commonality, association, connection into one whole of all means and tools.

Thus, integrated marketing communications is a set of means and tools combined into one process, which is aimed at meeting the needs and requirements of both the seller and the consumer.

Recently, it has become apparent that the traditional use of marketing tools cannot solve all problems facing marketers in the modern information society. It should be noted that elements of marketing communications were considered as separate activities for long time, while in modern marketing philosophy the dominating idea is that their integration is absolutely necessary for success [3]. Hence, there is a need to use modern approaches based on the use of IMC (integrated marketing communications).

The more developed the market, the shorter the life cycle of a product or service. Therefore, the effective promotion of any activity without the introduction of new technologies and scientific achievements, the improvement of existing models, taking into account changes in the market and the needs of the buyer, as well as without the ability to be mobile among competitors, is very difficult. Such changes determine the innovative way of development of the industry.

IMC is a coordinated combination of marketing communications tools and other complex forms of promotion under the influence of the effect synergy, which gives a comprehensive maximum communication impact on the consumer for the strategic plans of a particular organization [4].

A promising direction for enhancing the communication component of marketing activities is the integration of all communication tools. In this regard, the optimization of the combination of individual communication constants comes to the fore. However, the business entity should be able to quantify the contribution of each to determine the clarity and effectiveness of the overall communications program. Achieving the goals of the company in today's conditions is impossible without the implementation of the concept of integrated marketing communications. This concept links all (or some) elements of the marketing communications system at all structural levels of the company - from service support of the product to public relations activities. This enables the generation of compelling informational messages that energize consumers to take action [5].

In order to make the promotion of goods effective, it is necessary to use all the tools of the control and analytical system of the enterprise. Analytical arsenal helps in building marketing communications. The authors of various articles often discuss the main reasons for the inefficiency of marketing communications, where they answer the questions: what influences building a connection between a company and its consumers, how and what

analytics methods will help a marketer to study the target audience and its segments, what analytical tools will be useful when developing a marketing strategy [6].

There is no doubt that for each specific situation in the system of promoting goods and services, its own set of promotional tools is required, and the effectiveness largely depends on how correctly the funds allocated for the promotion of goods will be spent. One of the problems that marketers face is how exactly to allocate the budget for different means of communication. For a deeper study of this problem, consider the technology for determining the structure of the budget for integrated marketing communications

2 Methods and Materials

Approaches to managing the IMC system are based on:
- flexible combination of market regulation methods,
- timely management information,
- marketing decision support systems,
- formation and regulation of the activities of market economic entities as open systems.

In this regard, the problem of finding the most rational and effective ways to determine the structure of the budget for promotion and the methodological foundations for its development in the framework of the marketing activities of enterprises is of particular relevance.

The study of this issue, a review of the works of domestic and foreign scientists showed that there are different approaches to determining the structure of the budget. Some of the approaches are based on expert assessments, on the experience of past years, on the experience of the most successful companies in the industry, and so on. We will consider a technique based on the use of the joint analysis procedure.

Joint analysis is a statistical method by which marketers determine the relative importance given by consumers to distinct characteristics, as well as the utility that consumers associate with levels of characteristics [7].

For the joint analysis procedure, as experts recommend, when selecting attribute levels, it is necessary to take a very serious approach to the list of characteristics with their attribute levels. Characteristics must be pronounced, make a major contribution to consumer preferences and choices, and must be controlled and managed. Typically, a study using joint analysis includes 6 or 7 characteristics of the object. To consider the technology for determining the structure of the budget in our case, three characteristics are used.

The research methodology is the following algorithm of actions:
1) Definition of the main stages of determining the structure of the IMC budget:
   a) Determination of the main means of marketing communications, the most important from the point of view of the current marketing situation, as well as the possible levels of their use.
   b) Valuation of possible combinations of assets.
   c) Statistical data processing (joint analysis) and calculation of the utility of a characteristic.
   d) determining the level of importance of a characteristic.
   e) Assessment of the reliability and reliability of the results obtained
2) Visualization and interpretation of joint analysis results.

3 Results

I. Definition of the main stages of determining the structure of the IMC budget.

Stage 1. The main means of marketing communications are determined, the most important from the point of view of the current marketing situation, as well as the possible levels of their use. According to classical marketing theory, the marketing communications mix consists of four main means of influence: advertising, sales promotion, public relations, direct marketing (personal selling) (table 1) [8].

The challenge facing experts is the definition of the most effective combination (variants) of the combination of these means of IMC (table 1).

Table 1. IMC's assets and their levels.

IMC's assets	Budget Levels	
	Code	Description
1. Advertisement	1	Low (less than the average level of the previous period)
	2	Middle (at the level of the previous period)
	3	High (more than the average level of the previous period)
2. Sales promotion	1	Low (less than the average level of the previous period)
	2	Middle (at the level of the previous period)
	3	High (more than the average level of the previous period)
3. Direct marketing	1	Low (less than the average level of the previous period)
	2	Middle (at the level of the previous period)
	3	High (more than the average level of the previous period)

Stage 2. Evaluation of possible combinations. Given three means and using 3 most preferred means, 27 options for combining these means (profiles) can be built [9]. Each option (all 27 options) is evaluated by specialists on a Likert scale. In this case, a 9-point scale is used. Based on the assessment, ratings of options (profiles) are determined, the most highly rated profiles (in our example, 9 profiles) are used to solve the task facing specialists. The remaining 18 options can be used for the test sample.

Stage 3. This stage is a procedure of statistical data processing. For regression analysis has been used indicator "importance of the main attributive features", which is translated into dummy variables:

- high level - 1 0;
- average level - 0 1;
- low level - 0 0.

The result of the regression analysis is the parameters of the equation, which are then used to calculate the attribute utility indicator (Table 2).

Table 2. Results of statistical processing of data for joint analysis and calculation of the "utility of a characteristic" indicator.

Preference rating, Y	Advertisement		Sales promotion		Direct marketing	
	X_1	X_2	X_3	X_4	X_5	X_6
7	1	0	0	0	1	0
7	0	1	0	0	0	1
5	1	0	0	0	1	0
7	1	0	0	1	0	0
5	0	1	1	1	0	1
7	1	0	0	1	1	0
8	0	1	1	0	0	0
8	0	0	1	0	0	1
9	0	1	0	0	1	0
Joint analysis results						
b_0	b_1	b_2	b_3	b_4	b_5	b_6
13.11	-6.37	-3.26	-2.05	0.47	-0.63	-3.05

Additional restrictions		
$a_{1.1} - a_{1.3} = b_1$	$a_{2.1} - a_{2.3} = b_3$	$a_{3.1} - a_{3.3} = b_5$
$a_{1.2} - a_{1.3} = b_2$	$a_{2.2} - a_{2.3} = b_4$	$a_{3.2} - a_{3.3} = b_6$
$a_{1.1} + a_{1.2} + a_{1.3} = 0$	$a_{2.1} + a_{2.2} + a_{2.3} = 0$	$a_{3.1} + a_{3.2} + a_{3.3} = 0$

Utility calculation				
Characteristics	Code	Description	Utility	Importance
Advertisement	1	Low	-3.160	0.563
	2	Middle	-0.050	
	3	High	3.210	
Sales promotion	1	Low	-1.524	0.223
	2	Middle	0.997	
	3	High	0.527	
Direct marketing	1	Low	0.597	0.214
	2	Middle	-1.824	
	3	High	1.227	

Stage 4. After calculating the indicator "utility of the characteristic", an important indicator for the formation of the budget structure is determined. To calculate this indicator, a simple scheme is used, based on determining the sum of utility values ($\sum U$) presented in Table 2:

$$\sum U = [-3.160 - 3.210] + [-1.524 - 0.997] + [0.597 - (-1.824)] = 11.312;$$

4.1 Relative importance of the characteristic "advertising":

$$[-3.160 - 3.210] / 11.312 = 6.370 / 11.312 = 0.563;$$

4.2 Relative importance of the characteristic "sales promotion":

$$[-1.524 - 0.997] / 11.312 = 0.223;$$

4.3 Relative importance of the characteristic "direct marketing":

$$[0.597 - (-1.824)] / 11.312 = 0.214.$$

The data is also presented in Table 2.

Stage 5. Evaluation of the reliability of the results obtained.

The following are the main approaches for assessing the reliability and validity of the results of a joint analysis:

1. When applying regression analysis, the indicator R^2 is used (the criterion for matching (fitting) the calculated model to the initial data), which is considered the simplest approach, since the regression analysis procedure allows you to calculate this criterion immediately during the processing of the initial data.

2. During the survey of respondents, the characteristics profiles are re-evaluated. As a rule, this is carried out at the final stage of the interview. The obtained data is used for comparison with the results obtained earlier.

3. One of the popular and widely used approaches in marketing research is the division of the initial sample into two sub-samples - the analyzed and the test ones. As we have already noted, out of 27 options (profiles), profiles with the highest ratings are used for the analyzed sample, and profiles from 10 to 18 in the list of ratings are used for the test sample. The results obtained are also compared, usually using the correlation coefficient.

II. Visualization and interpretation of joint analysis results.
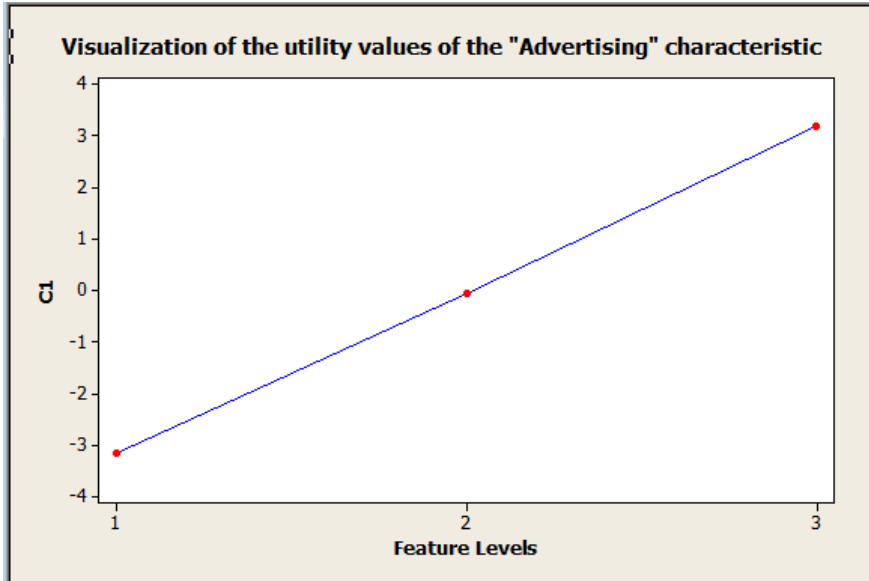To visualize the results, you can use simple graphs of utility functions (Figure 1).

Fig. 1. Visualization of the results on the characteristic "Advertising" for a low (1), medium (2), high (3) level of characteristics.

The data in Figure 1 indicate that in order to solve the task, in our example it is the task of increasing sales, advertising with a high level of advertising budget is the most effective, the utility of this level of characteristic is 3.210 (Table 2).
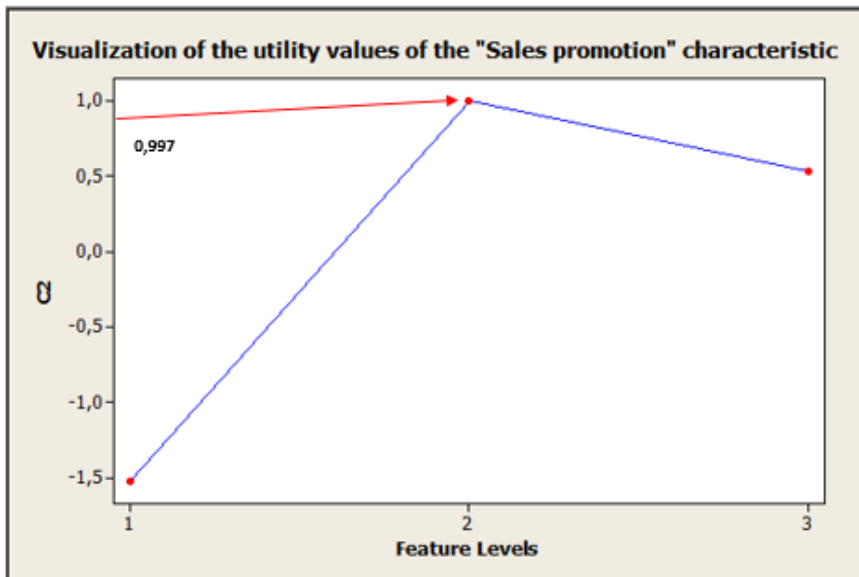

Fig. 2. Visualization of the results on the characteristic "Sales promotion" for a low (1), medium (2), high (3) level of characteristics.

As for the characteristic "Sales promotion, but the respondents consider the average level of the characteristic (0.997) to be the most effective.
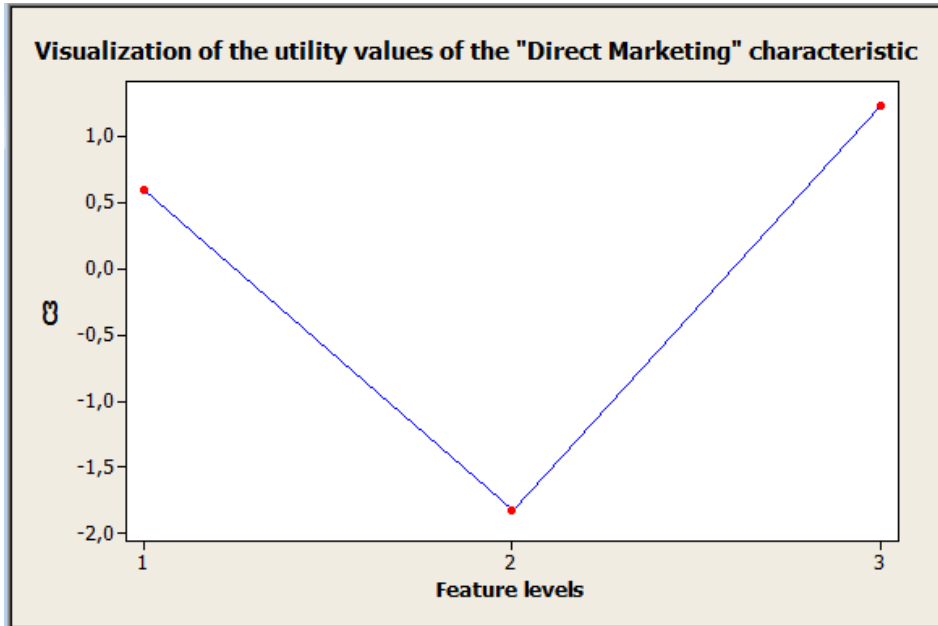

Fig. 3. Visualization of the results on the characteristic "Direct marketing" for a low (1), medium (2), high (3) level of characteristics.

Figure 3 shows that the level of direct marketing costs should be high, the utility of a high level of the characteristic is 1.277.

In general, the model for determining the budget structure is as follows:

$$B_V = 0.563 \ A + 0.223 \ SP + 0.214 \ DM \tag{1}$$

B_V – IMC's budget;
A - advertising;
SP – sales promotion;
DM – direct marketing.

Since of all the characteristics for these respondents, advertising has the largest and significantly exceeds the values of other characteristics, this segment can be classified as sensitive to advertising campaigns.

In the course of the regression analysis of the data in Table 2, an R2 value of 0.934 was obtained, which indicates a good fit of the model to the original data, as well as the stability of the joint analysis solutions.

Thus, the assessment of utilities and weights of relative importance is the basis for interpreting the results.

4 Discussion

Thus, according to Table 2, it can be seen that in our example, in terms of importance in the IMC system, respondents put advertising in the first place (0.563), sales promotion in second place (0.223), and direct marketing in third place (0.214).

It should be noted that the importance of certain characteristics largely depends on the situation on the market, the characteristics of the target segment, the means of promotion used by competitors, consumer preferences, and how they perceive certain means of communication. When determining the structure of the budget, the specialists of the enterprise must take this into account.

Thus, it can be concluded that for a given target market, the most optimal structure for the budget of integrated marketing communications will be the budget where the level of advertising costs will be maximum, the average level of sales promotion costs and the high level of direct marketing costs.

The current state of the market requires new technologies in order to provide sustainable development and maximize profit, without spending a large amount of money [10], and IMC can provide really communicative, beneficial assistance here [11]. Many experts in the field of economics and marketing note that the emergence of IMC is a new era in the development of not only marketing as a scientific subject, but also the improvement of communication activities in the trade and market process [12-14].

5 Conclusion

Authors did not consider such an important means of communication as the presence of an effective brand in the company. The necessary conditions for recognizing a brand as developed and effective are:

1) Widespread fame.
2) Significant sales and / or profits, leadership in its categories.
3) Expressed loyalty (fidelity) of consumers.
4) High competitiveness.
5) Consistently high quality.
6) Uniqueness.
7) High price with a relatively equal cost of goods in this category.
8) An increase in demand with a decrease in price.
9) Constant demand when the price rises.
10) Brands come to mind first when it comes to categories.

If the company has its own brand, this means, as a means of communication, should be given special attention.

To make managerial decisions in situations where a new product is being promoted to the target market, when studies have shown that the ongoing advertising campaign is ineffective, the cost-effectiveness of integrated communications is not high enough. Determining the budget structure for IMC is especially important when a new strong competitor appears in your target market and you need to develop a new program to promote the product to the market.

Determining the amount of funds needed for effective brand promotion is, according to many experts, one of the most difficult marketing tasks when developing a communication program. The amount of funds allocated for promotion is determined by two factors: the amount of additional cash the company receives as a result of sales growth, and the dependence of sales volumes on the costs of communication activities. Unfortunately, it is almost impossible to accurately estimate the second factor. In modern practice, several methods are used to form a budget for brand promotion.

As practice shows, the problem of determining the optimal budget for integrated marketing communications does not have an absolute solution. However, this does not mean that companies do not have any benchmarks in this area. In each case, technical calculations should be preceded by a thorough analysis of the situation and existing methods for determining the budget. Finding suitable methods and adapting them to a

specific situation can prevent large financial losses and significantly increase the effectiveness of marketing communications.

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