

EFFECTIVENESS OF BRANDING OF INTERCOMPANY COOPERATION IN THE CONTEXT OF ECONOMY DIGITALISATION

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Abstract. The research is devoted to the development of scientific and practical recommendations for the realisation of branding of interfirm cooperation in the conditions of digitalisation of the economy. In order to assess the effectiveness of branding in interfirm cooperation, a scientific and methodological approach is proposed, according to which the process of substantiation of the decision of the management concerning the choice of a variant of branding for each enterprise-participant and interfirm interaction, in general, takes place on the basis of a combination of periodic marketing research of brand recognition and construction of an economic and mathematical model of branding. The approach is based on the following statements: several enterprises that can interact are involved in production and trading activities; coherence of inter-firm interaction can have different length and number of participants, cover different functions (supply (S), production (P), logistics (L), trade (T)); at least one participant in inter-company interaction is involved in the branding process; brand effectiveness is assessed on the basis of brand awareness based on periodic market research.

The research focuses on the branding processes that arise from the inter-firm interaction of participants in production and trade chains. The subject of the research is the theoretical, methodological, organisational and applied aspects of the implementation of branding in inter-firm interaction in the context of the digitalisation of the economy. The research methodology includes various theoretical and practical principles and positions from economic theory, macroeconomics, microeconomics, systems theory, leading studies in the fields of management theory, marketing and management of marketing activities, and branding. The following methods were used throughout the research: economic generalisation, abstraction, systematisation, analysis and synthesis – to establish theoretical and methodological foundations and to clarify the concepts of "brand", "branding" and "production-trade chain"; classification – to define the content of the branding; economic-statistical and historical analysis, abstract-logical methods – to identify and analyse the impact of existing communication and information technologies on the development of Ukrainian branding; marketing research methods – desk analysis, expert evaluation and online surveys to develop an evaluation methodology for the effectiveness of inter-firm branding in production and trade chains; scientific abstraction – to establish a comprehensive approach to building the mechanism of inter-firm branding in production and trade chains; graphical and tabular methods – for the visual presentation of theoretical and analytical research results; methods of integral calculus and economic analysis – to formulate scientific and practical approaches to making strategic decisions about inter-firm branding in the context of the digitalisation of the economy. The aim of the research is to deepen theoretical and methodological positions and to provide practical recommendations for the implementation of branding in inter-firm interaction within production and trade chains.

Conclusions of the study: the comprehensive approach to building the mechanism of interfirm branding combines conceptual approaches to branding and the concept of forming interfirm interaction for the implementation

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of branding in one of its variants; the application of a comprehensive approach to building the mechanism of inter-firm branding makes it possible to consider the interrelationship and mutual influence of production and trade activities and to achieve a synergistic effect from the use of branding throughout the entire production and trade chain; the implementation of the mechanism of inter-firm branding is reflected in a scientific-practical approach to making strategic decisions on branding in production and trade chains. This approach emphasises the importance of branding activities at each stage of product creation and promotion, based on branding algorithmisation, and provides specific recommendations for all participants in the chain, resulting in increased effectiveness of their marketing activities.

Key words: brand, branding, inter-firm interaction, inter-firm interaction branding.

JEL Classification: M13, M21, M31

1. Introduction

The transformation processes taking place in the economy of Ukraine, its digitalisation and integration into the world economic space, require domestic companies to strengthen the identification of their own products. This process is impossible without the use of branding technologies. Branding in the activity of modern enterprises is the most important component of their strategic development, which allows to form their competitive advantages, directly influencing the consciousness of consumers.

The integration of Ukraine into the European and global space, the intensification of globalisation trends, the growing competition in the domestic market, and the establishment of formal and informal channels of product promotion and distribution are accompanied by the growing saturation of the market space with information. The importance and value of this information is also increasing. In such conditions, the processes of shaping consumer demand and loyalty become significantly more complicated, and the pressure of marketing influence on consumers increases.

Therefore, the market success and competitive advantages of Ukrainian companies depend not only on their internal efficiency and ability to adapt quickly to changes in the external environment, but also on their ability to secure stable market positions in the long term. This ability is ensured by the proper use of branding in their activities, which allows not only to identify the company's products, but also to increase the overall market value of the company. It is worth noting that joint branding has recently become more relevant, as it reduces the risk of market entry, provides relevant competitive advantages to companies engaged in joint activities, and reduces the level of marketing expenses for product promotion.

It is an undeniable fact that skilful application of the theory and practice of branding by Ukrainian companies can ensure their increased identification with the market, leading to the strengthening of their competitive positions and, as a result, an increase in profitability and operational efficiency.

A company's ability to create and effectively manage brands is a key source of market success in an era of technological progress and increased competition. However, even a strong product brand created by a manufacturing company may fail in the market if it is not adequately supported by marketing distribution channels, which requires the consolidation of the activities of both manufacturing and trading companies. All these factors have determined the relevance of researching the theoretical and practical foundations of branding not only for individual production and trading companies, but also in the context of interfirm interaction.

The **aim of the research** is to deepen theoretical and methodological positions and to provide practical recommendations for the implementation of branding in inter-firm interaction within production and trade chains.

The **object of research** is the branding processes that arise from the inter-firm interaction of participants in production and trade chains.

The **subject of the research** is the theoretical, methodological, organisational and applied aspects of the implementation of branding in inter-firm interaction in the context of the digitalisation of the economy.

The **research methodology** includes various theoretical and practical principles and positions from economic theory, macroeconomics, microeconomics, systems theory, leading studies in the fields of management theory, marketing and management of marketing activities, and branding.

2. Research and Results

The theoretical and methodological principles of brand creation and management have been covered by the following scientists in their works: D. Akker (Moore, 2016), T. Ambler, L. Balabanova, J. Bennett, G. Biedenbach (Biedenbach, 2022), O. Bilan, T. Grigorchuk, G. Calach (Kalach, 2020), K. Keller (Keller, 2020), B. Cova (Cova, 2022), S. Kovalchuk (Kovalchuk, 2021), P. Kotler (Kotler, 2016), Y. Larina, Y. Marchuk, O. Zozulov, V. Parcak,

I. Perevozova (Tanasiichuk, 2020), K. Oneto (Oneto, 2018), E. Romat, T. Lyubarenko, J. Huang (Huang, 2015), T. Polishchuk, V. Savetin, G. Savina, I. Soloviov, S. Haminich, L. Hollebeek (Hollebeek, 2021), O. Shamanska, K. Shetty (Shetty, 2021), etc. The issue of formation of interfirm interaction in the sphere of marketing and logistics distribution. They considered in their works such scientists as: J. Stock (Swanson, 2018), D. Lambert, J. Mentzer (Flint, 2014), E. Krykavskyy (Krykavskyy, 2019), N. Chukhrain, O. Shumets, D. Zhurikina, K. Tankov, O. Hirna, M. Kovalev, M. Parfyonov, V. Scherbakov, A. Parfyonov, K. Dobrovolska (Dobrovolska, 2019), etc.

In the process of thorough analysis of works it is found out that most scientists focus on the concept of management of interfirm interaction at the stage of supply. On the other hand, the state and degree of development of issues of formation and management of interfirm interaction at all stages of business activity, as well as branding in this interaction did not find sufficient reflection in modern scientific literature. The importance and necessity of solving the outlined issues and problems led to the choice of the topic, the definition of the purpose and objectives of the research. In order to assess the effectiveness of interfirm cooperation branding, a scientific and methodological approach is proposed, according to which the process of substantiating the decision of the management concerning the choice of the proposed branding variant for each enterprise-participant and interfirm interaction as a whole takes place on the basis of a combination of periodic marketing research of brand recognition and construction of an economic and mathematical model of branding.

The simplest form of intercompany interaction is the following (the following elements are used):

Supply – Product – Logistic – Trading (1)

Of course, logistics is usually a part of supply chain, manufacturing and intermediary activities (e.g., delivery of pizza and other food products, semi-finished products). But there are also more complex production and trading processes where the production or technological process is actually multi-stage. Then, instead of sequence (1), consider the following options:

- A) Supply – Product – Logistic – Product –
 – Logistic – Trading
 B) Supply – Product – Logistic – Product – Logistic –
 – Product – Logistic – Trading (2)

In the respective multi-stage technological processes, parts of such long-term interactions eventually "separate" themselves, becoming certain brands.

An example of this is the production and trade of building materials, which consumers buy independently (e.g., in the network of trade centres

"Epicenter K") and then carry out the corresponding construction works with the participation of construction companies (especially for housing and decoration in the private sector), while there is the possibility of a "broad" order, in the framework of which the construction company itself carries out the initial selection of materials and components, ensures their delivery to the place of destination, and then carries out the basic works (for example, roofing, installation of plastic windows, installation of doors, etc.).

Thanks to this separation of inter-firm interaction, the network of "Epicentre K" trading centres in particular looks exactly like (1), where logistics is a component of the commercial activity (ordered and paid for building materials are delivered to the place of destination by the company's own transport, which is included in the payment).

Decisions about identifying specific components of inter-firm interaction should depend on the effectiveness of branding.

Brand effectiveness is a rather complex concept. There are several approaches to interpreting brand effectiveness. These approaches use different indicators – demand, availability, production and sales levels, profitability, stability of seasonal fluctuations in demand (or absence of fluctuations).

However, all these brand performance indicators are based on a category such as recognition. In fact, it is a fundamental concept by which a consumer chooses a brand. Brand awareness also has a psychological basis. It is about the consumer's experience – both negative and positive – on the basis of which preference is given to a particular brand. This experience is built up over time, not immediately. As a result, the consumer's choice is made on the basis of a certain complex reaction, which includes, in addition to economic factors (prices, discounts) and quality indicators, the trust created by recognition. That is why brand recognition is chosen on the basis of branding effectiveness.

As a rule, branding begins at the final stage of inter-company cooperation. At the same time, branding does not break. For example, if the logo is already placed on the manufacturer's side, then it will also be placed at the logistics stage. Therefore, it is easy to list the number of branding variants, starting with the simplest one, when branding is present only at the stage of trade. Defining the elements of inter-company interaction in capital letters, it is possible to distinguish four branding options for consistency (1):

T, LT, PLT, SPLT. (3)

In sequence (2), there are obviously six branding options:

T, LT, PLT, LPLT, PLPLT, SPLPLT.

Of course, recognition is not made of steel. It is related to the brand's popularity, which can sometimes be quite volatile. In addition, there may even be a seasonality to the perception. Google Trends, for example, allows you to view and study the peculiarities of seasonal demand (<https://trends.google.com/trends>). With this resource, one can see how the popularity of the best-known brands, which in turn may be competitors, changes. At the same time, the change in popularity or awareness of a brand is not always correlated with the same indicator for the equestrian brand. In particular, the Coca-Cola Company and PepsiCo, which have rather closely linked "ups and downs", often also have different peaks of popularity (in the period from 26 May to 1 June 2019 in the USA, the popularity rating of The Coca-Cola Company grew by almost 70%, while the rating of PepsiCo remained virtually unchanged).

Let a series of observations for recent periods be performed. Then the matrix of branding variants, for example, for the case of four branding variants (3), looks like this:

periods of observation

$$\begin{array}{c} \begin{matrix} & 1 & 2 & \dots & p-1 & p \\ \begin{matrix} T \\ LT \\ PLT \\ SPLT \end{matrix} & \left(\begin{matrix} r_{11} & r_{12} & \dots & r_{1p-1} & r_{1p} \\ r_{21} & r_{22} & \dots & r_{2p-1} & r_{2p} \\ r_{31} & r_{32} & \dots & r_{3p-1} & r_{3p} \\ r_{41} & r_{42} & \dots & r_{4p-1} & r_{4p} \end{matrix} \right) \end{matrix} \end{array}, \quad (4)$$

where an additional number r_{kj} is the recognition k -variant of branding j -period of observation. Since the study is seasonal, such periods can be months or quarters (summer, autumn, winter, spring). However, the entire observation period can be divided into several weeks.

Matrix n of variants of branding in general case:

$$R = \left(\begin{matrix} r_{11} & r_{12} & \dots & r_{1p-1} & r_{1p} \\ r_{21} & r_{22} & \dots & r_{2p-1} & r_{2p} \\ \vdots & \vdots & \ddots & \vdots & \vdots \\ r_{n1} & r_{n2} & \dots & r_{np-1} & r_{np} \end{matrix} \right) \quad (5)$$

In order to assess all np the situations in the matrix (5) during j monitoring period, a sociological survey Q_j of respondents is conducted, each of which is proposed to show the level of recognition of a certain brand for each n variant of branding. The corresponding scale of recognition is used. Such a survey is conducted at each of the p observation periods. If r_{kjq} – estimation of the recognition k -variant of branding in the j -th period of observation given by the q -th respondent, then the arithmetic average of such assessments will be recognized by the k -variant of branding in the j -th period of observation:

$$r_{kj} = \frac{1}{Q_j} \cdot \sum_{q=1}^{Q_j} r_{kjq}$$

(for all $k=1, \dots, n$ and $j=1, \dots, p$). (6)

Add a combination of all the options of branding through $\{\text{Branding}_k\}_{k=1}^n$, where, for example,

$$\begin{aligned} \text{Branding}_1 &= T, \text{Branding}_2 = LT, \\ \text{Branding}_3 &= PLT, \text{Branding}_4 = SPLT, \\ \text{for four variants of branding} \end{aligned} \quad (3).$$

In order to select the most effective branding option, the decision theory approach should be used. Only methods without probabilistic distributions can be used, as their estimation is extremely difficult and unreliable at any monitoring period. The following methods (criteria) are used (Voloshyn, 2010):

- 1) Maximin criteria;
- 2) Savage criteria;
- 3) Gurwitz criteria;
- 4) Bayes-Laplace criteria;
- 5) Hodges-Lehman criteria.

In general, the most effective variant of branding according to the maximin criteria is (Voloshyn, 2010):

$$\text{Branding}_*^{(\text{MM})} = \arg \max_{\{\text{Branding}_k\}_{k=1}^n} \min_{j=1, p} (r_{kj}). \quad (7)$$

According to the Savage criteria the most effective variant of branding is:

$$\text{Branding}_*^{(\text{Sev})} = \arg \min_{\{\text{Branding}_k\}_{k=1}^n} \max_{j=1, p} (f_{kj}) \quad (8)$$

where

$$f_{kj} = \max_{i=1, n} r_{ij} - r_{kj} \text{ when } k = \overline{1, n} \text{ and } j = \overline{1, p}. \quad (9)$$

The most effective variant of branding according to Hurwicz criterion is:

$$\begin{aligned} \text{Branding}_*^{(\text{Hur})} &= \arg \max_{\{\text{Branding}_k\}_{k=1}^n} \left\{ \frac{1}{2} \cdot \max_{j=1, p} (r_{kj}) + \frac{1}{2} \cdot \min_{j=1, p} (r_{kj}) \right\} = \\ &= \arg \max_{\{\text{Branding}_k\}_{k=1}^n} \left\{ \max_{j=1, p} (r_{kj}) + \min_{j=1, p} (r_{kj}) \right\}, \end{aligned} \quad (10)$$

where the multiplier 1/2 is excluded here because it does not affect the branding variant at which the maximum is achieved (Voloshyn, 2010).

The Bayes-Laplace criterion is applied with the assumption of the probability level of the observation periods. Therefore, the most effective variant of branding based on the Bayes-Laplace criterion is:

$$\begin{aligned} \text{Branding}_*^{(\text{BL})} &= \arg \max_{\{\text{Branding}_k\}_{k=1}^n} \frac{1}{p} \cdot \sum_{j=1}^p r_{kj} = \\ &= \arg \max_{\{\text{Branding}_k\}_{k=1}^n} \sum_{j=1}^p r_{kj}, \end{aligned} \quad (11)$$

where the $1/p$ multiplier is excluded here because it does not affect the branding option at which the maximum will be achieved.

The Hodges-Lemann criterion also works with probabilities, as it uses mathematical expectations in the Bayes-Laplace criterion. Therefore, the

most effective variant of branding according to the Hodges-Lemann criterion is (Voloshyn, 2010; Romanuke, 2018):

$$\begin{aligned} \text{Branding}_*^{(\text{HL})} &= \arg \max_{\{\text{Branding}_k\}_{k=1}^n} \left(\frac{1}{2} \cdot \frac{1}{p} \cdot \sum_{j=1}^p r_{kj} + \frac{1}{2} \cdot \min_{j=1,p}(r_{kj}) \right) = \\ &= \arg \max_{\{\text{Branding}_k\}_{k=1}^n} \left(\frac{1}{p} \cdot \sum_{j=1}^p r_{kj} + \min_{j=1,p}(r_{kj}) \right). \quad (12) \end{aligned}$$

In addition to these methods, there are still mixed (combined or hybrid) criteria (Romanuke, 2018). Sum up all the values under the maximum sign in formulas (7), (10), (11), (12) and subtract the values under the minus sign in (8):

$$\begin{aligned} \min_{j=1,p}(r_{kj}) - \max_{j=1,p}(f_{kj}) + \frac{1}{2} \cdot \max_{j=1,p}(r_{kj}) + \frac{1}{2} \cdot \min_{j=1,p}(r_{kj}) + \\ + \frac{1}{p} \cdot \sum_{j=1}^p r_{kj} + \frac{1}{2p} \cdot \sum_{j=1}^p r_{kj} + \frac{1}{2} \cdot \min_{j=1,p}(r_{kj}) = \\ = 2 \cdot \min_{j=1,p}(r_{kj}) - \max_{j=1,p}(f_{kj}) + \frac{1}{2} \cdot \max_{j=1,p}(r_{kj}) + \frac{3}{2p} \cdot \sum_{j=1}^p r_{kj} \end{aligned}$$

Then the most effective branding option according to hybrid criteria is:

$$\text{Branding}_* = \arg \max_{\{\text{Branding}_k\}_{k=1}^n} \left\{ \begin{array}{l} 2 \cdot \min_{j=1,p}(r_{kj}) - \max_{j=1,p}(f_{kj}) + \\ + \frac{1}{2} \cdot \max_{j=1,p}(r_{kj}) + \frac{3}{2p} \cdot \sum_{j=1}^p r_{kj} \end{array} \right\}. \quad (13)$$

The approach used can be represented as a certain sequence of actions (Figure 1).

Note that formula (13) also ensures the stability of the solution for the most effective branding variant by combining several unlikely criteria Branding_* : a slight change in the respondents' opinion may change the result for some criteria, but the final result for the hybrid criterion (13) is most likely to remain unchanged (Romanuke, 2018; Romanuke, 2016).

The volume of the sociological survey can be considered sufficient to average the recognition ratings according to formula (6) if they are relatively stable, starting from a certain volume Q_{0j} .

If there are more Q_{0j} respondents $Q_{1j} - Q_{0j}$ after the survey, the relative deviation between the respective arithmetic means should be within the control limits (Hmuranman, 2003):

$$100 \cdot \frac{\left| \frac{1}{Q_{1j}} \cdot \sum_{q=1}^{Q_{1j}} r_{kjq} - \frac{1}{Q_{0j}} \cdot \sum_{q=1}^{Q_{0j}} r_{kjq} \right|}{\frac{1}{Q_{0j}} \cdot \sum_{q=1}^{Q_{0j}} r_{kjq}} < d$$

(for all $k = 1, \dots, n$) (14)

at $5 \leq d \leq 10$ (d – is a percentage deviation). If after the poll is still $Q_j - Q_{1j}$ the same inequality is taking place among the respondents:

$$100 \cdot \frac{\left| \frac{1}{Q_j} \cdot \sum_{q=1}^{Q_j} r_{kjq} - \frac{1}{Q_{1j}} \cdot \sum_{q=1}^{Q_{1j}} r_{kjq} \right|}{\frac{1}{Q_{1j}} \cdot \sum_{q=1}^{Q_{1j}} r_{kjq}} < d$$

(for all $k = 1, \dots, n$), (15)

the volume of the sociological survey among Q_j respondents, where $Q_{0j} < Q_{1j} < Q_j$, is sufficient for this observation period (Di Bella, 2019). Then, the survey is interrupted for the j -th observation period and the arithmetic mean estimates of the recognisability of all the branding options are finally determined according to the formula (6).

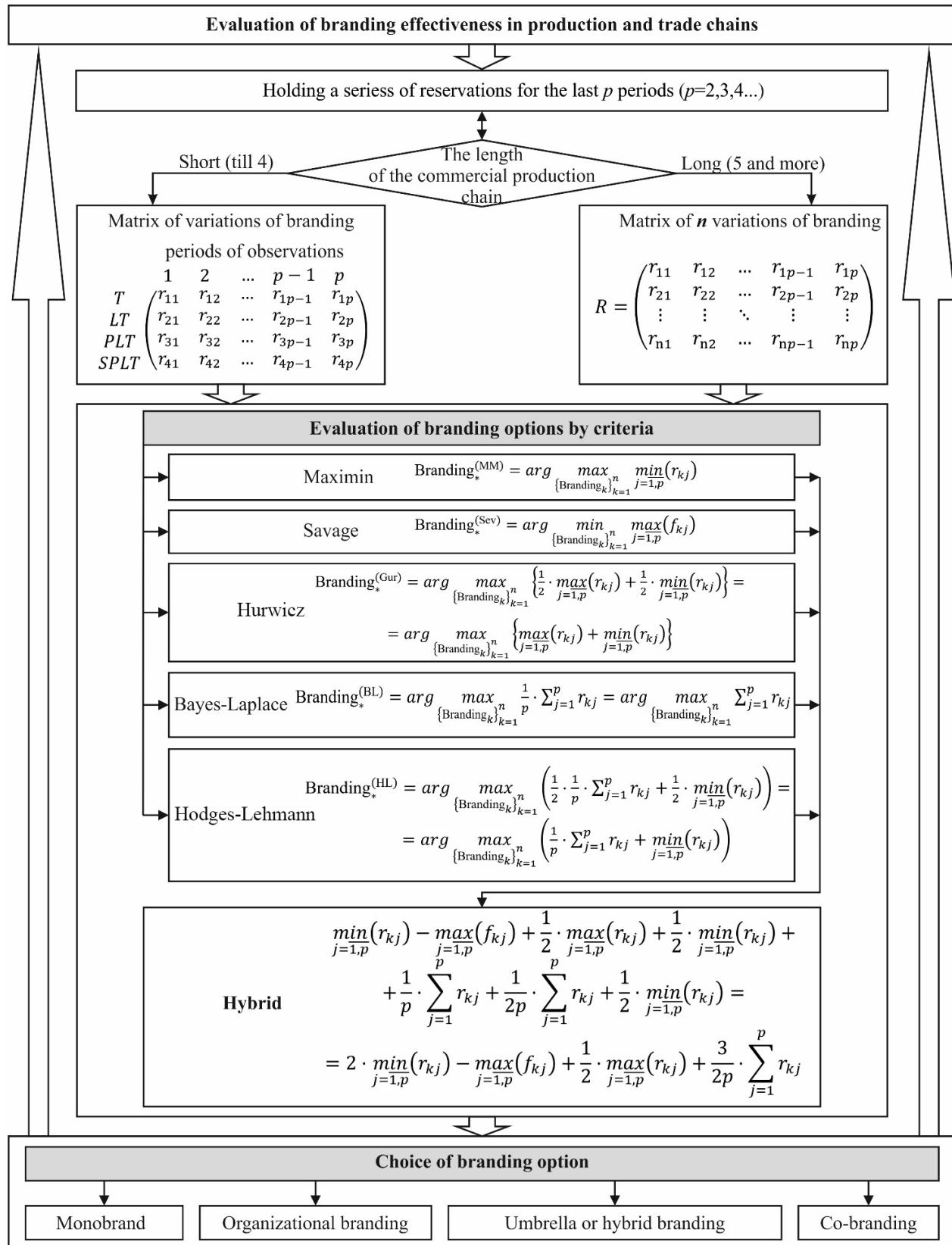
The level of recognition in the sociological survey is of fundamental importance. The reliability of the results depends on it. A small or narrow scale (with two or three possible answers from the respondent) is more convenient for the respondents, because due to a small number of variants of the answer it does not require them to make long and deep calculations. However, such scales require more surveys (respondents). As a result, the sociological survey is longer. On the other hand, surveys based on broad scales (with the possibility of more choices) can be short-term under certain additional conditions. However, they are inconvenient for most non-professional respondents, who may give inaccurate or even false answers due to some confusion caused by many possible answers (Romanuke, 2016). Therefore, the optimal scale for our case is a four-point scale from 1 to 4, where 1 is the minimum brand awareness and 4 is the maximum brand awareness.

The respondent is asked to rate each of the branding options. At the same time, the branding variants are presented both linguistically and through illustrations. For example, all variants of branding (3) for consistency (1), except for trade, can be accompanied by visualisation: logistics – in the form of appropriate transport, supplier and manufacturer – as summarised, but not detailed, images of specifics of supply and production of products for this brand.

The selection of effective branding variants was carried out on the example of food companies for TM "Mamyn Khlib" and TM "Nasoloda".

TM "Mamyn Khlib" is a network of cafes and bakeries in Khmelnytsky and the Khmelnytsky region. Visitors are offered a wide range of popular European and Ukrainian dishes prepared from natural, fresh and organically produced ingredients. The café chain consists of 5 establishments in Khmelnytsky, Krasiliv and Shepetivka. Recently, the cafes started to offer food delivery service.

The history of TM "Mamyn Khlib" began in October 2001. At the beginning the company was focused only on the production of bakery products. The products

**Figure 1. Economy-mathematical model of branding**

Source: own elaboration

were baked in a small mini-bakery with modern equipment.

In 2003 the company opened another direction – production of confectionery (cakes, pies, ivory products).

In 2006, a new automatic line for the production of puff pastry products "RONDO DOGO" (Switzerland) was installed, which allowed us to expand our product range with new high-quality products with various fillings.

Every year, the company "Mamyn Khlib" grew, its products became more and more famous and in demand by customers, which led to the need to increase production volumes. Thus, the decision was made to build a new bakery.

In 2008, construction work was completed and a new state-of-the-art bakery was put into operation, designed in accordance with the European quality systems ISO 9001 and ISO 22000, in other words, equipped with "state-of-the-art technology".

At present, the company has three workshops – a dough workshop, a bakery workshop and a confectionery workshop. The company's management plans to reach the volume of 300 tons/month of confectionery production. At present the company employs about 80 people.

The "Nasoloda" brand is a family business. It is a modern company, a regional leader in the production of soft confectionery. The company has been present on the confectionery market for 20 years and offers more than 300 products and 8 product groups.

"Nasoloda" products are made only from the highest quality natural raw materials and do not contain any preservatives.

The technological process is carried out under constant strict quality control.

Guaranteed high quality, harmonious combination of refined tastes, original and unique design – these are the signs that make TM "Nasoloda" products easily recognisable.

The product range is based on original recipes and includes the following positions:

- wedding korovais;
- cakes;
- exclusive cakes;
- desserts;
- cupcakes, cake pops;
- sweets, handmade spices for baking.

For TM "Mamin Hlib" (m. Krasyliv, Khmelnytskyi Oblast), 26 respondents were interviewed in May 2020, which was sufficient to obtain a stable assessment of the brand awareness (during the monitoring period $j = 1$) with possible deviations of 6% ($d = 6$), where $Q_{0j} = 20$, $Q_{1j} = 23$ and $Q_j = 26$. These volumes have not changed in the future. Similar sociological surveys were carried out in June, July, August

and September, with their volumes controlled by formulae (14) and (15). The matrix of the four branding variants (4) was as follows:

1.4615	2.5000	2.5769	1.5769	1.4615
1.5769	1.3846	1.6154	2.5769	1.5000
2.4231	3.5769	2.4615	1.4615	2.4615
1.5385	3.5385	3.3077	1.4231	3.5385

The corresponding loss matrix with elements (9) for the Savage criterion (8):

0.9615	1.0769	0.7308	1.0000	2.0769
0.8462	2.1923	1.6923	0	2.0385
0	0	0.8462	1.1154	1.0769
0.8846	0.0385	0	1.1538	0

Then the most effective variant of TM "Mamyn Khlib" branding according to the hybrid criterion (13) is:

$$\text{Branding}_* = \arg \max_{\{\text{Branding}_k\}_{k=1}^4} \left\{ \begin{array}{l} 5.0077, 4.4615, \\ 7.3115, 7.4654 \end{array} \right\} = \text{Branding}_4$$

i.e., the option with the full sequence of inter-firm interaction (1).

For TM "Nasoloda" (Khmelnytskyi) such a study was conducted during six weeks in the summer of 2020: From 10 June to 5 July. During each of the six weeks 31 respondents were interviewed, which proved to be sufficient to obtain a constant assessment of the ability to reject 4% ($d = 4$, where $Q_{0j} = 20$, $Q_{1j} = 25$, $Q_j = 31$ for all $j = 1, \dots, 6$). These volumes did not change in the future. The matrix of the four branding options (4) for TM "Nasoloda" was as follows:

2.5161	3.2903	2.5161	3.5484	3.7097	2.4516
3.6452	3.3871	3.5161	2.4839	2.5806	2.5161
2.4516	3.5484	3.4839	3.6452	2.4194	3.3871
3.5484	3.3226	3.6774	3.6774	2.5161	3.4516

The corresponding loss matrix with elements (9) for the Savage criterion (8):

1.1290	0.2581	1.1613	0.1290	0	1.0000
0	0.1613	0.1613	1.1935	1.1290	0.9355
1.1935	0	0.1935	0.0323	1.2903	0.0645
0.0968	0.2258	0	0	1.1935	0

Then the most effective variant of TM "Nasoloda" branding according to the hybrid criterion (13) is:

$$\text{Branding}_* = \arg \max_{\{\text{Branding}_k\}_{k=1}^4} \left\{ \begin{array}{l} 10.1048, 10.1290, \\ 10.1048, 10.7258 \end{array} \right\} = \text{Branding}_4$$

i.e., again, this is a variant with a full sequence of inter-firm interaction (1). Note that, in contrast to TM "Mamyn Khlib", the options of the brands of TM "Nasoloda" with incomplete sequence have approximately the same efficiency (this is visible in the last formula). Here, the option with the complete

sequence of interfirm interaction is dominated by others. In the case of TM "Mamyn Khlib", the difference between recognition by the PLT and SPLT variants is insignificant.

3. Discussion and Conclusions

- 1) The conducted research has shown that the comprehensive approach to building the mechanism of interfirm branding combines conceptual approaches to branding and the concept of formation of interfirm interaction for implementation of branding in one of its variants. Therefore, the comprehensive approach to building the mechanism of inter-firm branding in production and trade chains was proposed, which is based on the formation of unified processes for all markets and products, a unified terminology base, a data structure for strategic analysis, strategic models and programmes.
- 2) The application of a comprehensive approach to building the mechanism of inter-firm branding makes it possible to consider the interrelationship and mutual influence of production and trade activities and to achieve a synergistic effect from the use of branding throughout the entire production and trade chain.
- 3) The marketing research was conducted using an analytical toolkit based on a comprehensive application of desk, field and Internet research in combination with predictive methods, which allowed to identify and analyse the impact of existing communication and information technologies on the development of Ukrainian branding.

4) Desk research identified the top 10 most successful domestic brands based on the financial performance indicators of the companies using these brands and their development prospects. It was found that the top 10 traditionally includes food manufacturers, most of which sell their products through their own network of branded stores or adapted retail platforms. One of the least developed segments of the food market is the organic market, where 485 companies will be active in 2021. However, most of them do not have registered trademarks or brand names and do not have their own production and distribution chains. As a result, they are forced to rely on the services of retail chains or specialised stores, which hinders effective branding efforts.

5) A scientific-methodological approach is proposed to evaluate the effectiveness of inter-firm branding in production and trade chains. According to this approach, the process of justifying the management decision regarding the choice of branding for each participating company and the entire production and trade chain is based on a combination of periodic marketing research on brand recognition and the construction of an economic-mathematical model of branding.

In the conditions of the digital economy, the developed scientific and methodological approach allows to determine the effectiveness of the branding application at all stages of the inter-company cooperation and for the participants of the companies, and thus to propose options for the improvement of the existing situation.

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