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Artificial intelligence algorithms and professional brand scaling efficiency in international markets

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Abstract. The **purpose of the study** is to determine the impact of the intensity, breadth and depth of integration of artificial intelligence algorithms on the effectiveness of international scaling of professional brands and to substantiate the methodological tools for assessing the systematicity of their use. **Methodology**. The effectiveness of international scaling of professional brands with different intensities of artificial intelligence algorithm integration is compared using five economic metrics: CAC, conversion rate, TTM, IRS and ROMI or ROAS. **Results**. The calculation model reveals a fundamental difference between the breadth of functional coverage of business processes by intelligent algorithms and the depth of their integration into the marketing processes of a professional brand. The use of eight functions with one point each forms an AIB of 100% for AID 1.0, while four functions of maximum depth provide an AIB of 50% for AID 4.0. Therefore, an increase in the number of intelligent tools in itself does not characterize the quality of algorithmic integration. The highest level of systematicity corresponds to a configuration of 6–8 integrated functions, for which the ratio G3 > G2 > G1 is

provided. The synergistic potential of integrating smart algorithms emerges from various functional combinations, particularly advertising optimization with lead scoring and CRM, as well as predictive analytics with segmentation and personalization. Distinguishing between the breadth and depth of integration prevents the methodological error of equating technological saturation with economic efficiency. The model's applicability is limited by the level of data maturity and the actual level of data integration into business processes. **Conclusions**. The proposed approach shifts the assessment of using artificial intelligence algorithms for international scaling of professional brands from assessing the availability of individual tools to measuring their integration across processes. The matrix allows professional brand owners and marketing managers to prioritize algorithmic configurations based on expected impacts on acquisition costs, conversion, speed to market, and marketing returns. With low data maturity, simpler localization and advertising optimization configurations remain appropriate.

Keywords: algorithmic integration, international scaling, data maturity, marketing personalization, lead management, synergistic effect.

Вплив алгоритмів штучного інтелекту на ефективність масштабування професійних брендів на міжнародних ринках

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Анотація. Мета дослідження – визначення впливу інтенсивності, ширини та глибини інтеграції алгоритмів штучного інтелекту на ефективність міжнародного масштабування професійних брендів та обґрунтування методичного інструментарію для оцінювання системності їх використання.

Методологія. Результативність міжнародного масштабування професійних брендів за різної інтенсивності інтеграції алгоритмів штучного інтернету зіставляється за п'ятьма економічними метриками: CAC, рівнем конверсії, часом виходу на ринок, часткою міжнародної виручки та ROMI або ROAS. **Результати**. Розрахункова модель виявляє принципову відмінність між шириною функціонального охоплення бізнес-процесів розумними алгоритмами та глибиною їх інтеграції у маркетингові процеси професійного бренду. Використання восьми функцій по одному балу формує AIB 100 % за AID 1,0, тоді як чотири функції максимальної глибини забезпечують AIB 50 % за AID 4,0. Тому збільшення кількості інтелектуальних інструментів саме по собі не характеризує якості алгоритмічної інтеграції. Найвищий рівень системності відповідає конфігурації 6–8 інтегрованих функцій, для якої передбачено співвідношення G3 > G2 > G1. Синергетичний потенціал інтеграції розумних алгоритмів формується за різних функціональних комбінацій, зокрема рекламної оптимізації з оцінки лідів і CRM, а також прогнозної аналітики із сегментацією та персоналізацією. Розмежування ширини та глибини інтеграції усуває методичну помилку, за якої технологічну насиченість прирівнюють до економічної результативності. Межа застосування моделі визначається рівнем зрілості управління даними та фактичним рівнем інтеграції даних у бізнес-процеси. **Висновки**. Запропонований підхід переводить оцінювання використання алгоритмів штучного інтернету у міжнародному масштабуванні професійних брендів від фіксації наявності окремих інструментів до вимірювання рівня їхньої міжпроцесної інтеграції. Матриця дає змогу власникам професійних брендів і маркетинговим менеджерам визначати пріоритетність алгоритмічних конфігурацій відповідно до очікуваного впливу на витрати залучення, конверсію, швидкість виходу на ринок і маркетингову віддачу. За низької зрілості даних доцільними залишаються простіші конфігурації локалізації та рекламної оптимізації.

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Ключові слова: алгоритмічна інтеграція, міжнародне масштабування, зрілість управління даними, маркетингова персоналізація, управління лідами, синергетичний ефект.

Problem statement. The international scaling of a professional brand increasingly relies on algorithmic processing of marketing data. Modern artificial intelligence (AI) tools are used for demand forecasting, audience segmentation, and advertising optimization. However, simply expanding the set of digital tools does not guarantee automatic growth in economic results. The decisive factor is the quality of their system integration into consistent marketing and management processes. The main problem is the lack of a methodically agreed-upon method for assessing algorithmic integration.

Additional pressure comes from the heterogeneity of international audiences and the dependence of sales on personalized communication. Therefore, the same set of algorithms generates different economic effects at different enterprises. The final result depends on data maturity, the structure of the Customer Relationship Management (CRM) system, and the configuration of marketing processes. The practical task is to move from declaring the use of technologies to measuring their contribution to the economic performance of international brand scaling. Such an assessment requires recording the dynamics of customer acquisition costs, conversion rates, and time to market. This logic forms the basis of the current study.

Analysis of recent research and publications. The article by T. T. Hue and T. H. Hung [1] systematizes the applications of AI in branding. The researchers traced the shift in scientific interest to personalization and digital interaction. The economic result of integrating several AI functions remained beyond detailed analysis. The work by T. Lindner, J. F. Puck, and H. Puhr [2] examined the impact of AI on international business through the prism of algorithm-enhanced managerial decision-making. The authors reveal changes in the logic of managerial choice when using AI. Still, the measurable relationship between the intensity of algorithmic

integration and the results of international scaling needs to be specified. The scientific publication by D. V. Raiko [3] highlights the combination of AI and big data in building brand communication in the global market to personalize interaction with international audiences. The contribution of data maturity to the final marketing return remains uncertain.

D. V. Berehovenko and L. V. Pashchuk [4] analyze directions for using AI to promote products in the global market. The researchers characterize the applied directions of algorithmic support of marketing strategy, but do not distinguish between the fragmentary use of individual tools and the systemic integration of AI algorithms into interconnected marketing processes. The study by L. T. Nguyen, G. T. T. Nguyen, U. M. Vu and T. T. Luu [5] reveals the application of AI in brand management. The final assessment of the complementarity of individual algorithmic functions remains insufficiently formalized. A. Stancu and M. Panait [6] link AI services with the transformation of marketing strategy. However, their analysis does not establish a quantitative boundary between the coverage of individual marketing functions by AI algorithms and their systemic integration into interconnected brand management processes.

In the scientific work by A. Lyndyuk, I. Havrylyuk, Yu. Tomashevskii, R. Khirivskyi and M. Kohut [7] identified new opportunities for the algorithmization of marketing communications, although the issue of comparing technological intensity with conversion rates and marketing returns remains unresolved. M. Sojáková [8] analyzes the use of AI directly in international brand marketing. The economic results of different depths of algorithmization require a separate quantitative measurement. The study by V. Makedon, V. Myachin, P. Sokol and S. Hordiichuk [9] studied the synchronization of marketing strategies with organizational changes. The researchers' logic underscores the need to consider the brand's internal readiness for technological and organizational transformations.

Highlighting previously unresolved parts of the overall problem. Existing work sufficiently characterizes individual areas of application of artificial

intelligence in branding. Currently, the issues of marketing communications, personalization and advertising are well studied. At the same time, quantifying the impact of algorithms on economic performance remains unresolved.

In modern scientific discourse, point application of tools and systemic inter-process integration are not sufficiently distinguished. Difficulties arise from the heterogeneity of indicators and different levels of data maturity across companies. Additional complications stem from the difficulty of matching brands to their organizational characteristics. The complementary effect of the combination of key algorithmic functions requires separate verification. This includes segmentation, personalization, localization, advertising optimization, lead scoring and CRM. In the absence of such a distinction, it is difficult to establish the real contribution of algorithmic tools to the final result.

Formulation of the article goals (statement of the task). The purpose of the article is to assess the impact of the intensity and structure of the integration of AI algorithms on the effectiveness of the international scaling of professional brands.

Tasks of the research:

– to develop a methodical approach to assessing the intensity, breadth and depth of AI integration in the processes of international scaling of professional brands;

– to determine the effectiveness of individual and combined AI functions based on indicators of economic efficiency of international scaling of professional brands.

Presentation of the main research material. The study's methodological design followed the sequence of operations for international scaling of a professional brand. Eight functional areas of AI application were identified for evaluation: demand analysis, audience segmentation, localization, content adaptation, personalization, advertising engagement, lead qualification and CRM support. For each area, the degree of integration of algorithms into the corresponding marketing process was assessed. The episodic use of a separate generative service indicates a

lower level of integration than automated data exchange between CRM, audience segmentation and conversion management. This evaluation principle distinguishes the number of AI tools used and the depth of their inclusion in business processes. A brand with several interconnected algorithmic functions may have a higher level of integration than a brand with more autonomously used services [10, p. 263].

A similar logic is observed in international practice. Research on interactive branding links AI use to personalization, trend forecasting, targeted advertising, and customer experience development. In Coca-Cola's practice, algorithmic solutions encompass product innovation, marketing campaign optimization, and customer engagement. The Interline AI Report 2025 [11] examines practical areas for integrating AI into forecasting, content creation, retail, and brand-consumer interactions. To formalize differences like AI applications, an eight-component system for evaluating the level of integration of algorithmic functions into marketing processes for international brand scaling is proposed, in which each function receives 0 to 4 points based on the depth of its inclusion in the relevant business process. The scale provides 0 points for no use of the function, 1 point for occasional use, 2 points for regular autonomous execution of the operation, 3 points for systematic integration of the algorithmic function into the corresponding business process, and 4 points for automated data exchange between interconnected business processes (table 1).

The data in Table 1 show that AI functions are associated with different aspects of international brand scaling performance. Predictive analytics and localization are mainly focused on reducing time to market, while segmentation, personalization, lead scoring and advertising optimization are directly related to conversion and customer acquisition costs. CRM automation complements this system by managing the duration of the sales cycle and conversion transitions.

Table 1

Score matrix of functional integration of AI algorithms into international scaling of a professional brand

Algorithmic function					
0 points	1 point	2 points	3 points	4 points	Basic KPI
Predictive market analytics					
Not applicable	One-time forecasts	Regular analysis of individual indicators	The forecast is included in market planning	The forecast automatically adjusts the decision	TTM, ROMI
Audience segmentation					
Manual segmentation	One-time clustering	Regular algorithmic grouping	Dynamic segments by behavior	Segments automatically update campaigns	CAC*, conversion rate
Localization					
Manual adaptation	Machine translation	Regular language adaptation	Semantic and cultural adaptation	Localization changes according to market reaction	TTM**, CTR
Content generation					
None	One-time generation	Regular creation of materials	Segments form content	Generation is connected to CRM and campaign results	Cost per content unit, CTR
Personalization					
Single offer	One-time personal messages	Personalization by segments	Dynamic offer by behavior	The offer changes at the level of a specific lead	Conversion rate, Lifetime value
Lead scoring					
Manual selection	One-time algorithmic ranking	Regular scoring	Scoring controls the priority of the contact	Scoring automatically launches the sales scenario	MQL-to-SQL***, CAC
Advertising optimization					
Manual management	Automatic recommendations	Automatic adjustment of bids	Budget optimization by conversions	Budget is distributed by forecast return	ROAS****, CAC
CRM automation					

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Algorithmic function					
0 points	1 point	2 points	3 points	4 points	Basic KPI
Manual support	Individual triggers	Regular automatic scripts	Integrated marketing workflows	End-to-end data exchange between functions	Sales cycle, conversion rate

Notes: *CAC (Customer Acquisition Cost); **TTM (Time-to-Market); ***MQL-to-SQL (Marketing Qualified Lead to Sales Qualified Lead); ****ROAS (Return on Ad Spend)

Source: developed by the author based on [12; 13]

A simple sum of points does not fully reflect the brand's technological configuration. Two identical sums can occur with different process coverage widths. Therefore, the assessment is provided based on three interrelated parameters: 1) intensity; 2) width; and 3) depth of integration [14]. The AI Integration Intensity Index (AIII) is proposed to be calculated using the formula:

$$AIII_i = \sum_{j=1}^{n} w_j F_{ij} \quad (1),$$

where F_{ij} is the score of the integration level of AI function j for professional brand i, from 0 to 4 points; w is the weighting factor of AI function j; i is the serial number of the studied professional brand; j is the serial number of the algorithmic AI function, from 1 to 8.

The breadth of integration will be determined by a separate indicator AI Breadth (AIB_i), an index of the functional breadth of AI use by professional brand i (in %):

$$AIB_i = \frac{\sum_{j=1}^{n} I \cdot F_{ij} > 0}{n} \cdot 100 \quad (2),$$

where $I(F_{ij}>0)$ – indicator of the actual use of AI function j; F_{ij} – score of AI function j for professional brand i; $I=1$ – AI function is used and has a score above 0 points; $I=0$ – the corresponding AI function is not used; 8 – the total number of AI functions predicted by the model.

If a brand uses six out of eight evaluated AI functions, the breadth of algorithmic integration (AIB) is 75%, but this indicator does not reveal the depth of

their use. For this purpose, the AI Depth (*AID*) indicator is introduced: the average depth of integration of actually used AI functions of professional brand *i* (in points), which is calculated as:

$$AID_i = \frac{\dot{\sum}_{j=\bullet} F_{ij}}{\dot{\sum}_{j=\bullet} I \bullet F_{ij} > \bullet\bullet} \quad (3),$$

where F_{ij} is the assessment of the depth of integration of AI function *j*, from 0 to 4 points; $I(F_{ij}>0)$ is the indicator of the actual use of the corresponding function; $\sum F_{ij}$ is the sum of points for all AI functions; $\sum I(F_{ij}>0)$ – is the number of AI functions that the professional brand actually uses.

This plane reveals the methodological difference between AI spread and maturity. A brand with eight functions has one point each (*AIB*=100%), but (*AID*=1.0). A brand with four functions has only (*AIB*=50%), but its (*AID*=4.0). Thus, the first indicator is characterized by wide but superficial use; the second has narrow and deep integration. To assess the complexity of integrating AI algorithms into interconnected business processes, it is proposed to use the index of systematic integration of AI algorithms of professional brand *i* (AIS_i):

$$AIS_i = \frac{AIII_i \cdot AIB_i \cdot AID_i}{\bullet\bullet\bullet} \quad (4),$$

where *AIIIi* – intensity of integration of AI algorithms, points; *AIBi* – functional width of use of AI algorithms, %; *AIDi* – average depth of integration of active AI functions, points; *400* – normalization coefficient, formed by taking into account the maximum depth of integration of 4 points.

The scaling result is proposed to be determined using several dependent variables, since no single indicator simultaneously reflects the cost, time and revenue sides of expansion. The indicators selected for the study are CAC, conversion rate, TTM, international revenue share and return on marketing investment (ROMI) or ROAS. The formula calculates the international cost of customer acquisition (CAC_i^{INT}):

$$CAC_i^{INT} = \frac{MC_i^{INT} + SC_i^{INT}}{NC_i^{INT}} \quad (5),$$

where MC_i^{INT} – marketing expenses of brand i, directed to international markets for the studied period; SC_i^{INT} – expenses for sales and support in attracting international customers; NC_i^{INT} – number of new international customers attracted during the studied period; INT – designation of the indicator related to the international segment of the brand's activity.

To assess the speed of entry of a professional brand into the international market, the TTM indicator is used, which reflects the duration of the period from the decision to enter the international market of professional brand i to the actual launch of its offer in the target market:

$$TTM_i = D_i^{launch} - D_i^{decision} \quad (6),$$

where D_i^{launch} is the date the brand's commercial activity actually starts in the new national market; $D_i^{decision}$ is the date management approves the decision to enter the relevant market.

International revenue expansion is calculated as the International Revenue Share of professional brand i (IRS_i), %:

$$IRS_i = \frac{R_i^{INT}}{R_i^{TOTAL}} \cdot \bullet \bullet \bullet \quad (7),$$

where R_i^{INT} is the professional brand's revenue from customers in international markets; R_i^{TOTAL} is the professional brand's total revenue for the same period.

To move from evaluating individual AI functions to determining their relationship with the results of international scaling, an analytical model is formed to assess the impact of algorithmic integration on the brand's economic indicators. To build it, measured variables, coded scales, and defined directions of expected relationships are used, which provide a quantitative comparison of the level of algorithmic integration with the relevant performance indicators (table 2).

Table 2

Parametric system of variables for assessing the algorithmic effect of international scaling

Variable	Metric	Range/coding	Expected sign of β	Interpretation criterion
Intensity of AI integration (AIII)	Weighted sum of functions	0–100	+	1 point increase in KPI AIII
Breadth of AI application (AIB)	Share of active functions	0–100 %	+	Functional coverage effect
Depth of AI integration (AID)	Average score	1–4	+	Technological maturity effect
Data maturity (DM)	Composite score	0–100	+	Quality of information environment
Brand age (BA)	Years of operation	ln (1+ years)	+	Accumulated market experience
Team scale (TS)	Number of employees	ln(1+n)	±	Resource effect
Number of markets (NM)	Number of countries	2 or more	+	International expansion experience
Offer Type (OT)	B2B, B2C, mixed	0/1 dummy	±	Sales cycle differences

Source: developed by the author

Thus, the basic evaluation model takes the following formula:

$$Y_{ik} = \beta_. + \beta_. AIII_i + \beta_. DM_i + \beta_. BA_i + \beta_. TS_i + \beta_. NM_i + \sum_{m=•}^{M} \gamma_m C_{im} + \varepsilon_i \quad (8),$$

where Y_{ik} is the value of the effective international scaling indicator k for brand i; β_0 is the regression model constant; β_1 is the influence coefficient of the intensity of AI integration; $AIIi$ – is the index of the intensity of integration of AI algorithms for brand i; β_2 is the influence coefficient of data maturity; DM_i is the data maturity, the level of data maturity of brand i; BA_i is the age of the professional brand; TS_i is the size of the professional brand team; NM_i is the number of national markets of brand presence; C_{im} is the categorical control variable m for brand i; γ_m is the coefficient of the corresponding categorical control variable; M is the number of categorical control variables; ε_i is the random error of the regression model.

The dependence of the AI effect on data maturity is checked through the effective international scaling indicator for brand *i* (Y_{ik}):

$$Y_{ik} = \beta_{\cdot} + \beta_{\cdot} AIII_i + \beta_{\cdot} DM_i + \beta_{\cdot} \cdot AIII_i \cdot DM_i \cdot + \sum_{m=\cdot}^{M} \gamma_m C_{im} + \varepsilon_i \quad (9),$$

where β_0 – model constant; $AIII_i$ – intensity of integration of AI algorithms; DM_i – level of data maturity of professional brand; $AIII_i \times DM_i$ – interaction term between intensity of AI use and data maturity; β_1 – direct effect of intensity of AI integration; β_2 – direct effect of data maturity; β_3 – coefficient of moderation effect of data maturity; C_{im} – control variable m; γ_m – regression coefficient of control variable; ε_i – random error of model.

The coefficient β_3 here has separate research meaning. A positive, statistically significant value means stronger AI results at higher data maturity. The use of measured variables and coded scales provides a single basis for comparing the level of algorithmic integration with the brand's economic indicators, allowing the effect of actual AI use in business processes to be separated from the mere presence of digital platforms [15]. The need for such a distinction is also illustrated by examples from international companies. For Coca-Cola, Accuracy is 87.4% (the proportion of correct model predictions), F1-score is 82.9% (the harmonic mean of precision and recall), and Root Mean Square Error (RMSE) is 0.31. Using an algorithmic model is associated with commercial performance and scalability. Still, the effect depends on the industry, the length of the consumer decision cycle, and the organization's digital maturity. For international scaling, this dependence is complemented by AI's impact on cross-border interaction. The World Trade Organization associates the use of AI with the reduction of language barriers, the improvement of international communication and search between suppliers and buyers. At the professional brand level, these changes are reflected in the time to enter the target market, the cost of customer acquisition, and the conversion of international leads [16].

The established relationship between the method of applying AI and economic results requires considering not only the overall intensity of algorithmic integration,

but also its internal structure. The AIII index calculated at the previous stage captures the overall intensity of AI integration, but identical or similar values may correspond to different technological configurations within the brand. For example, one brand may concentrate algorithmic functions on content generation and advertising optimization, while another combines segmentation, personalization, localization, lead scoring, predictive analytics and CRM. With a close AIII, such configurations differ in the number of interconnected functions, the depth of their integration and the nature of data exchange between marketing processes [17, p. 6].

Differences between technological configurations require a separate definition of the effect that arises from the joint use of several algorithmic functions. For this purpose, the synergistic effect of the functional combination of algorithmic functions c for professional brand i (SE_{ic}) is proposed to be estimated as the difference between the result of their joint application and the sum of the effects obtained from the isolated use of each function:

$$SE_{ic} = Y_{ic}^{comb} - \left(Y_i^{\cdot} + \sum_{j=\cdot}^{m} \Delta Y_{ij}^{iso} \right) \quad (10),$$

where Y_i^{ccomb} is the actual value of the performance indicator with the complex application of the algorithmic combination c; Y_i^0 is the base value of the performance indicator before the application of the studied combination of algorithms; ΔY_{ij}^{iso} is the isolated increase in the performance indicator from the application of a separate algorithmic function j; m is the number of algorithmic functions included in the studied combination; i is the serial number of the professional brand; j is the serial number of the algorithmic function; c is the studied combination of algorithmic functions.

$SE_{ic} > 0$ indicates complementarity among the algorithms; $SE_{ic} = 0$ indicates an additive effect; and $SE_{ic} < 0$ indicates functional duplication or ineffective integration. Not all combinations have the same mechanism of influence – segmentation and personalization work by more accurately matching the offer to the audience's characteristics. Localization, together with content generation, reduces

the costs of adapting to a new language environment. Advertising optimization, lead scoring and CRM form a consistent contour from attraction to sale [18, p. 26]. To test these combinations, a matrix is proposed that combines functional complexity, the expected direction of the effect, and a statistical test criterion (table 3).

Table 3

Matrix of empirical verification of the complementarity of algorithmic functions during international scaling of a professional brand

Combination of functions	Number of functions	Expected channel of effect	Main KPI	Expected β	Synergy criterion	Priority
Segmentation + personalization	2	Accuracy of matching the offer	Conversion rate	>0	$\beta_{12} > \beta_1 + \beta_2$	4
Localization + content generation	2	Shortening the adaptation cycle	TTM	<0	The joint effect exceeds the isolated one	5
Advertising optimization + lead scoring	2	Selection of economically valuable leads	CAC	<0	Additional reduction in CAC	4
Lead scoring + CRM	2	Reducing funnel losses	MQL-to-SQL	>0	β interaction > 0	5
Advertising + lead scoring + CRM	3	End-to-end engagement optimization	ROMI	>0	Synergy effect > 0	5
Forecasting + segmentation + personalization	3	Demand and response prediction	Conversion rate	>0	Synergy effect > 0	5
Localization + personalization + CRM	3	Adaptation of international communication	IRS	>0	β interaction > 0	4
Integration of 6–8 functions	6–8	End-to-end algorithmic management	ISEI*	>0	G3>G2> G1**	5

Note: *ISEI – International Scaling Efficiency Index; **G1 – group of brands with low level of AI system integration; G2 – group of brands with medium level of AI system integration; G3 – a group of brands with a high level of AI system integration; G3 > G2 > G1 – the expected ratio of international scaling performance between groups, for which a higher level of AI system integration corresponds to a higher value of the performance indicator.

Source: developed by the author

The proposed matrix establishes a clear procedure for checking the economic complementarity of algorithmic functions, replacing a simple rating of technological solutions. The result for each combination is compared simultaneously with the

isolated effects of its individual components and the initial value of the corresponding efficiency indicator. This analysis sequence significantly reduces the risk of misinterpreting typical operational growth as algorithmic synergy.

The dynamics of conversion rates, return on investment in marketing and the share of international income are considered positive in the event of an increase in their final values. In contrast, for the cost of customer acquisition and time to market, the desired economic result is their systematic reduction. This revealed asymmetry makes it impossible to automatically interpret an equally positive regression coefficient as an undeniable increase in efficiency. Configurations that cover successive stages of the international marketing funnel are of significant scientific and practical importance. Optimizing advertising campaigns can reduce acquisition costs, but it does not eliminate losses at the lead-processing stage. Introducing automatic lead scoring changes, the qualitative characteristics of the incoming flow, while customer relationship management tools shift algorithmic influence to subsequent conversion processes (fig. 1).

An alternative economic logic is observed when analyzing the combination of localization tools and automatic content generation. In this case, the primary result is reduced time spent adapting the brand to the requirements of the new market environment. The next stage is a reduction in the specific cost of preparing localized communications. Only after these phases does the effect manifest in click-through rate, final conversion and total revenue.

The described sequence confirms the inexpediency of evaluating a separate algorithmic function by a single indicator, since this distorts the real analysis of its economic contribution.

Practical priority setting requires comparing the results with the resource complexity of integration processes. Tools with a high regression coefficient, but significant requirements for data quality and intersystem interaction, are not always the priority for implementation. For entities with a low level of data maturity, it is more rational to start with primary localization, content adaptation or optimization

of advertising channels. The transition to segmentation, personalization and lead scoring becomes appropriate only after the accumulation of a properly structured array of information.

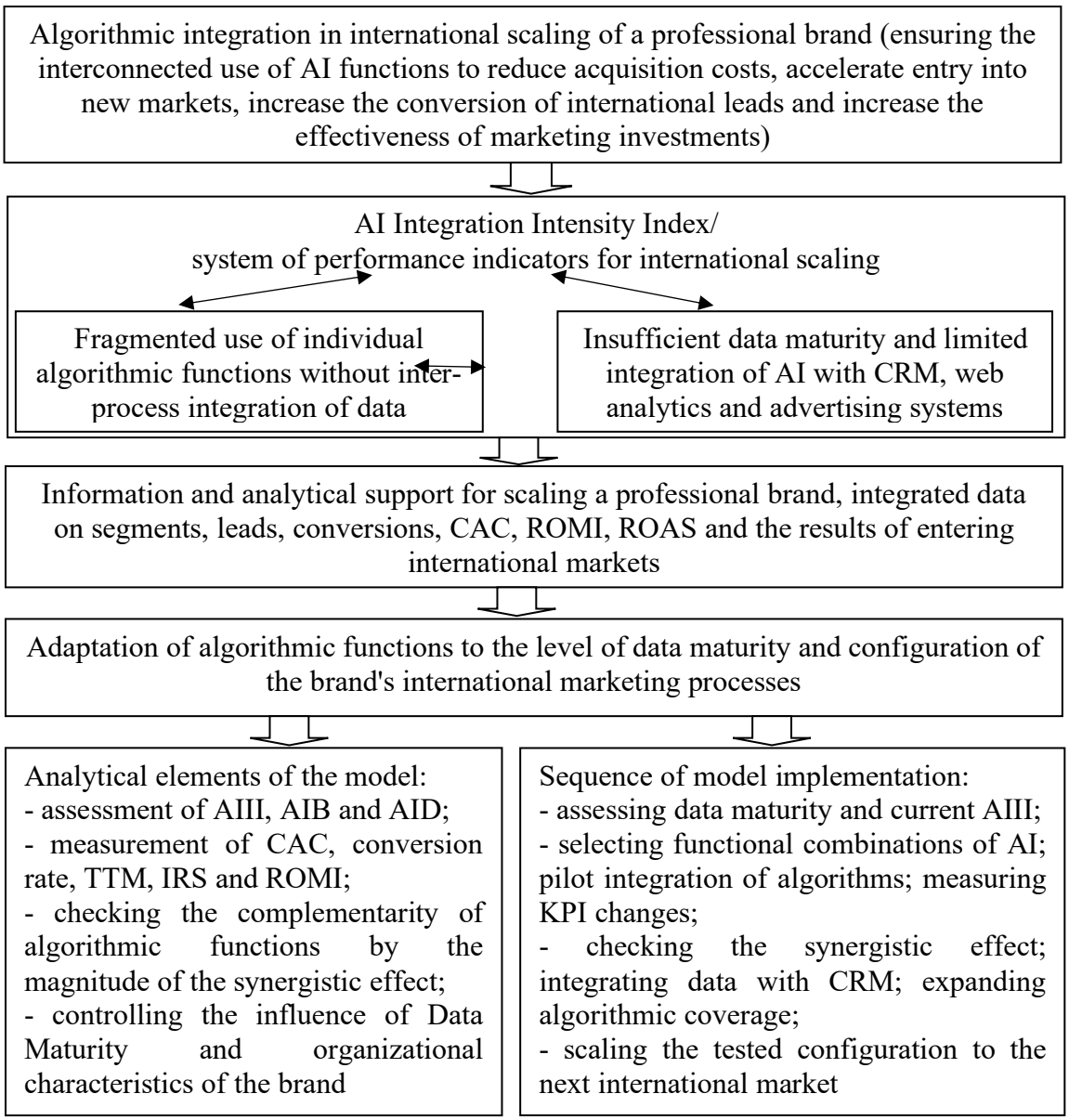

Fig. 1. Structural and analytical model of integrating AI algorithms into the process of international scaling of a professional brand

Source: developed by the author

The obtained values of β, synergistic effect, AIII, AIB and AID serve as basic parameters for management decisions. Maximizing the number of applied artificial intelligence functions cannot serve as an independent goal of the scaling procedure. The configuration in which each subsequent algorithmic function enhances already

integrated processes, reduces costs and time to market, and increases final conversion and profitability is economically justified.

Conclusions. A model for assessing the algorithmic integration of AI into the processes of international brand scaling is proposed, which combines three complementary parameters: the intensity of integration, the breadth of functional coverage, and the depth of integration of active functions. Their joint application makes it possible to separate the number of AI tools used from the real level of their inclusion in interconnected business processes. It is established that the same or close final values can correspond to fundamentally different technological configurations. The study shows that using eight functions with one point each yield AIB 100% and AID 1.0, while four functions at maximum depth correspond to AIB 50% and AID 4.0. This justifies the need for a multiparameter assessment of the systematicity of algorithmic integration.

It was determined that the effectiveness of international scaling is not related to the number of implemented AI solutions, but to the configuration of their interaction, the level of Data Maturity and the degree of inter-process data exchange. The highest level of systematicity corresponds to a combination of 6–8 integrated functions, for which the effectiveness ratio G3 > G2 > G1 is provided. The greatest synergistic potential lies in combinations of advertising optimization, lead scoring and CRM, as well as predictive analytics, segmentation and personalization. The practical significance of the model lies in its ability to rank algorithmic configurations by expected impact on CAC, conversion rate, TTM, ROMI and ROAS and to determine the appropriate depth of integration based on the maturity of brand data.

The scientific novelty of the results lies in distinguishing the intensity, breadth and depth of AI integration as independent parameters and in assessing the synergistic effects of functional combinations. Further empirical validation of the model should cover brands from different industries and levels of digital maturity to

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establish thresholds for AIII, AIB, AID, and AIS for different international scaling scenarios.

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