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INVESTIGATING THE INTERRELATION BETWEEN UKRAINIAN MACROECONOMIC INDICATORS AND INNOVATIVE DIGITAL MARKETING PROMOTION INSTRUMENTS

Abstract. *This paper explores the influence of innovative marketing promotion tools on the dynamics of GDP growth in Ukraine. It identifies the key factors that contribute to economic development. The research is based on the theoretical and methodological framework provided by the State Statistics Service of Ukraine and the All-Ukrainian Advertising Coalition. Through the utilization of linear regression analysis and the method of least squares, the study establishes a formalized relationship between the examined indicators and predicts their corresponding values. Furthermore, the study justifies the impact of marketing on the functioning and revenue of companies, highlighting that marketing expenditures play a significant role in shaping the overall GDP of Ukraine. Notably, digital marketing emerges as the most progressive component of the marketing field, with its scale consistently expanding.*

Keywords: *GDP, economic development, Internet marketing, Internet media, digital marketing.*

Introduction. The advent of digital marketing strategies and the exponential growth of the digital economy have significantly transformed the promotional landscape for businesses worldwide. Consequently, unravelling the intricate interplay between macroeconomic indicators and the utilization of innovative digital marketing promotion instruments has emerged as a critical area of inquiry for both scholars and policymakers.

The application of digital marketing techniques has garnered considerable attention due to their potential to enhance market competitiveness, spur economic growth, and influence consumer behaviour. Digital marketing encompasses a diverse range of instruments, including social media advertising, content marketing, influencer marketing, mobile advertising, among others. These instruments empower businesses to reach broader audiences, augment brand visibility, and foster novel forms of customer engagement.

For enterprises, organizations, and other economic entities, the question of survival becomes critically important, forcing them to fight for consumers and seek new, more effective forms of communication to promote their products. The characteristic feature of recent decades is the globalization of marketing practices, which has led to the development of traditional marketing approaches and the emergence of new communication tools with consumers and other market participants. One result of this transformation can be considered as digital marketing.

The fundamental principles of researching mechanisms for managing the national economy aimed at ensuring its macroeconomic stability, as well as their connection with marketing activities, are laid out in the scientific works of numerous foreign and domestic scholars. For instance, Kotler Ph. and Keller K. [Kotler Ph., Keller K., 2021] investigate the impact of macroeconomic indicators such as GDP, inflation, unemployment, etc., on the marketing strategy of enterprises. Farris P., Bendel N., Pfaiher F., and Raibstein D. [Farris P.W et al., 2010] explore the relationship between macroeconomic indicators and marketing metrics (sales, profitability, percentage of repeat purchases, etc.). Savytska N. and Chmil H. [Savytska N., Chmil H., 2020] discuss the application of marketing approaches to the digital transformation of the economy, and others.

Moreover, in recent times, increasing attention has been given by scholars to economic-mathematical methods and models for analysing the marketing activities of enterprises. It is through the application of mathematical models that more qualitative and reliable results can be obtained. Researchers such as Kalynychenko M., Fedorovych R. [Kalynychenko M., 2012; Fedorovych R. et al., 2014] have emphasized the importance and practicality of optimization models in marketing activities, which enhance the quality and effectiveness of marketing decision-making.

Contemporary research on the analysis of marketing measures using various economic-mathematical tools, including those that help forecast future market situations, is of interest not only to Ukrainian scholars but also to international researchers. Despite the advancements made, there is still insufficient evidence regarding measures for improving data management in digital marketing. These issues have been addressed and elaborated upon in publications by Kumar A., Mangla S., Luthra S., Rana N., Dwivedi K., and Saura J. [Kumar A. et. al., 2018; Saura J., 2021], which present the results of proposed models that are useful to marketers and service providers in predicting customer preferences and their effectiveness in an uncertain environment. The findings of research not only assist service providers in

updating their products and services according to consumer needs but also help them increase profits and minimize risks through the utilization of current Data Science analysis methods.

So, the aim of the article is to examine the interrelationship between the GDP level and marketing measures implemented by government authorities and local self-government, and identify the factors that have contributed the most to GDP growth in the period from 2017 to 2021.

Research results. Conditions of the modern digital economy and consumer empowerment create a basis for the formation of customer demands for practically instant access to services or goods. A significant portion of consumers and businesses, including government authorities and local self-government, have become active Internet users, which compels everyone to redirect their activities towards the online sphere. The ever-changing and unstable social, political, and economic environment urgently requires digital development, through which the use of marketing tools can enhance the competitiveness of the Ukrainian economy [Melnyk L., Derykolenko A., 2020; Us M., 2018; Krasovska O., 2018]. Various indicators are used to measure economic development, and the statistical analysis of these indicators allows for assessing the direction and trends of development. At the macro level, the key indicator of a country's economic development is the gross domestic product (GDP). The highlighting of a state's strengths through digital marketing will accordingly impact the GDP volume and, under a positive scenario, contribute to its growth rate year after year. To prove this hypothesis, it is necessary to analyse the influence of specific marketing measures on Ukraine's GDP.

Firstly, let us examine the overall dynamics of Ukraine's GDP from 2017 to 2021 and conduct an analysis. Table 1 is compiled using data provided by the State Statistics Service of Ukraine on their official website [State, 2022].

Table 1

Statistical Data on the Dynamics of Ukraine's GDP for 2017-2021

Year	GDP (in million UAH)	Change in GDP (current year to previous year, %)
2017	2,982,920	17.6
2018	3,558,706	19.3
2019	3,974,564	11.7
2020	4,194,102	5.5
2021	5,459,574	30.2

Source: compiled by the authors based on [State, 2022]

As seen from the calculations presented in Table 1, there is an overall positive change in GDP in relation to the previous year. It is worth noting that each year from 2017 to 2021 showed slight growth, with a significant positive shift of over 30% in Ukraine's GDP from 2020 to 2021.

Therefore, in 2021, Ukraine achieved a record-high level of economic growth, with the country's GDP reaching \$200 billion for the first time. However, the economic recovery was slower than anticipated, primarily due to the high cost of energy resources, the negative impact of quarantine restrictions during the prolonged global pandemic, resulting in a weak recovery in the service sector, and limited capacities of certain production sectors.

After a challenging year in 2020, where nearly all areas of economic activity were less progressive due to the peak of the pandemic, the economy began to increase its production volumes. High price levels on the global commodity markets and active growth in the agricultural sector in Ukraine contributed to this. According to government data, industrial sectors recovered, driven by favourable conditions in external markets, as well as the construction industry, as the growth was facilitated by state infrastructure programs such as "Great Construction" - a government program aimed at extensive development of quality infrastructure in Ukraine [Panchenko V., Nanavov A., 2018].

However, for 2022, the National Bank forecasted an accelerated growth rate of the real GDP at 3.4%. Nevertheless, the rapid recovery of the economy will be limited by expensive energy resources, the impact of the geopolitical tensions on investments, as well as military events on the territory of Ukraine. Particularly noteworthy is the most significant factor that hinders rapid recovery, which is the consequences of the war, including increased costs for Ukraine's reconstruction, assistance to internally displaced persons, financing of the military-defence complex, and others.

Therefore, it is crucial to formulate a post-war economic development strategy for Ukraine, focusing on maximum deregulation, liberalization, and demonopolization. Restoring the country's new production potential, as well as creating a favourable business climate, will attract investments and sustain future economic growth in a situation where official international assistance from strategic partners is being reduced. The recovery model for each country is unique and depends on specific factors such as economic, geopolitical, and cultural characteristics. Having all the instruments for economic growth at its disposal, it is important to utilize them effectively. The success or failure of a country's recovery depends on this, as there are already examples of both successful and unsuccessful recoveries, such as Afghanistan or Iraq [Dyachenko A. et al., 2021].

For further analysis in the category of marketing measures, indicators of digital advertising in Ukraine were chosen. Several types of digital marketing measures that are gaining popularity each year were selected. The classification presented in Table 2 belongs to the Interactive Advertising Bureau Ukraine (IAB Ukraine), a non-profit organization whose goal is to promote the development of interactive advertising in Ukraine. It is a part of the international association IAB, which unites participants in the interactive advertising market. IAB offices operate successfully in over 40 countries on 4 continents. Ukraine obtained an IAB license in January 2018 [All-Ukrainian, 2022]. In its practice, IAB implemented a digital agency rating project during the quarantine, which provided an understanding of the key players in the market and allowed for budget verification.

Table 2

Statistical data on the dynamics of Digital advertising in Ukraine for 2017-2021

Digital Advertising (classified by IAB Ukraine)	Results 2017 (in million UAH)	Results 2018 (in million UAH)	Results 2019 (in million UAH)	Results 2020 (in million UAH)	Results 2021 (in million UAH)	Forecast for 2022 (in million UAH)	Change in indicators 2021 to 2020 (%)	Change in indicators 2022 to 2021 (%)
Banner ads, social media ads, rich media	1007	1813	2514	3180	4780	5333	50,3	11,6
Digital video, including YouTube	1928	2433	3134	3800	6053	6355	59,3	4,9
Total internet media	4003	5613	6314	6980	10833	11257	55,2	3,9
Search (paid search in search engines), including part of GDN	7411	9977	11601	12300	17835	18776	45	5,3
Influencer marketing	141	196	268	337	505	550	50	8,9
Other digital	385	485	575	630	693	782	10	12,8
Total internet market	14875	20517	24406	27227	40699	43053	47,5	44,1

Source: compiled by the authors based on [State, 2022; All-Ukrainian, 2022].

According to Table 2, the digital market is expected to continue demonstrating strong growth in 2022, with a projected increase of at least 44%. The actual growth between 2020 and 2021 was sustained at a level of 47%. This can be attributed to the further dominance of

global players, low entry barriers, and the post-COVID adaptation and reallocation of budgets from traditional offline media to online placements.

The growth in 2022 will primarily be driven by video and search advertising, where global players such as Google, Facebook, Instagram, and TikTok play a significant role. The expected growth in the influencer marketing sector will exceed 8% in 2022. Additionally, the SMM committee at IAB plans to include an evaluation of the volume of marketing in social media in the next forecast, while the Performance committee intends to test the methodology for assessing the SEO services market, which is currently an effective marketing tool for attracting new clients.

It is worth noting that there is currently no well-established methodology for evaluating the search market in Ukraine. Therefore, growth coefficients and turnover dynamics of agencies participating in the IAB market assessment are useful when evaluating this segment [All-Ukrainian, 2022; Kingsnorth S., 2022].

These insights indicate the positive outlook for the digital advertising market in Ukraine and highlight the importance of online advertising platforms and strategies for businesses to capitalize on this growth potential.

Let us examine the correlation between Ukraine's gross domestic product and expenditures on digital marketing tools. To accomplish this, we will employ econometric techniques, specifically utilizing the linear regression model. It is reasonable to hypothesize that there exists a relationship between these variables, which can be effectively described using linear functions. Consequently, we will apply the econometric model of linear regression in our analysis. Two variables were selected for regression analysis in Excel: the value of digital advertising expenditure in million UAH (X) and the value of GDP in million UAH (Y). The sample chosen is representative as it allows for the expansion of both qualitative and quantitative results of the research to a larger population.

Figure 1 presents the results of the constructed regression (the impact of marketing activities on GDP).

Regression statistics								
Multiple R	0,981256145							
R Square	0,962863623							
Adjusted R Square	0,95048483							
Standard Error	204914,8664							
Observations	5							
Analysis of Variance		df	SS	MS	F	Significance F		
Regression	1	3,26613E+12	3,26613E+12	77,78332431	0,003071831			
Residual	3	1,2597E+11	41990102488					
Total	4	3,3921E+12						
	Coefficients	Standard Error	t Statistic	P Value	Lower 95%	Upper 95%	Lower 95%	Upper 95%
Y-Intercept	1170913,332	337315,7909	3,47126747	0,040309316	97423,93971	2244402,725	97423,93971	2244402,725
Variable X1	107,4835143	12,18705042	8,81948549	0,003071831	68,69888075	146,2681479	68,69888075	146,2681479

Figure 1. Regression Results (Impact of Marketing Activities on GDP)

The regression can be considered adequate and influential, as the R Squared value is over 0.96% (the closer it is to 1, the better). The model is adequate, as the Significance F and P Value are less than 0.05, indicating the existence of a sufficiently strong relationship between the variables. Specifically, expenditures on digital marketing tools significantly affect the gross domestic product. Therefore, based on these high indicators, we can conclude that marketing has an impact on all sectors and on the overall functioning and revenue of companies. Since marketing activities are part of the GDP structure, their expenses also have an influence on the overall GDP of Ukraine.

The most progressive component of marketing is digital marketing. Its scale is growing at incredible rates, driven by factors such as the liberalization of economic activities and globalization of the economy. Their effect is manifested in the use of modern technologies to promote the country as a brand with a strong positioning both within Ukraine and on the international scale.

Conclusions. The findings of this study make a significant contribution to the existing body of knowledge by providing empirical evidence regarding the interrelationship between macroeconomic factors and the utilization of digital marketing tools in the Ukrainian context. Specifically, the study sheds light on the complex dynamics between macroeconomic factors and digital marketing tools, deepening our understanding of the role played by digital marketing in Ukraine's economic landscape. By elucidating the interplay between these variables, the research enhances comprehension of the mechanisms through which digital marketing influences and interacts with macroeconomic indicators. Therefore, studying the relationship between marketing and macroeconomic indicators is important for economic

development and the development of effective business strategies. However, it should be noted that the impact of marketing on macroeconomic indicators can be ambiguous and depends on various factors such as the state of the economy, competitive environment, consumer preferences etc.

So, using econometric methods, a high level of dependence between the extensive use of digital marketing and Ukraine's GDP has been demonstrated. The results offer actionable insights for businesses aiming to optimize their digital marketing strategies and policymakers endeavouring to foster an environment conducive to digital innovation and economic advancement. A promising direction for further research is the determination and analysis of indicators for evaluating digital marketing activities and its impact not only on the overall GDP dynamics but also on other micro and macroeconomic indicators that contribute to robust economic development in Ukraine, especially in the context of post-war recovery. Other key indicators characterizing economic crises, such as exchange rates, inflation, employment, production, and consumption of goods and services, can also be examined.

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