Assessment of digital tools utilization in marketing activities of enterprises in Ukraine and EU countries using cluster analysis method

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Abstract

In various industries of modern business, digital tools are becoming not only a support but also a key element of a successful marketing strategy. Particularly in the field of marketing, their utilization becomes a determining factor of efficiency and competitiveness of enterprises. The aim of the research is to systematize and analyze the level of digital tools utilization in the marketing activities of enterprises in Ukraine and European Union countries using the cluster analysis method. Various aspects of digital tools utilization in the marketing activities of enterprises have been considered, including website, social media, e-commerce, and more. A system of key indicators characterizing the level of digital tools utilization in the marketing activities of enterprises has been proposed. Cluster analysis has allowed to identify three groups of EU countries regarding the level of digital tools utilization in the marketing activities of enterprises. The grouping of countries has helped to understand the similarity in their approach to the use of digital tools, as well as to identify differences and peculiarities among market segments. A significant difference in the level of digital tools utilization has been observed among the clusters of the studied countries. According to the results of cluster modeling, Ukraine has been classified into the third cluster along with countries such as Bulgaria, Hungary, and Romania. A general analysis of indicators in this cluster indicates that Ukraine has the lowest level of digital tools utilization in the marketing activities of enterprises among the countries represented in this list. The research findings can be valuable for the development of marketing strategies and digital transformation of enterprises in the mentioned countries.

Keywords

digital marketing, digital tools, digitization, website, social media, e-commerce, cluster analysis, standardization of metrics.

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1. Introduction

In various sectors of modern business, digital tools have become not only a support but also a key element of successful marketing strategies. Particularly in the field of marketing, their use becomes a decisive factor in the effectiveness and competitiveness of enterprises. However, assessing the level of utilization of digital tools in marketing activities remains a relevant task for both Ukrainian and European companies.

Digital marketing is indeed becoming increasingly important and effective in achieving business goals. Many companies in Ukraine, as well as in other countries, are already leveraging digital technologies in their marketing activities. The assessment of digital tool utilization encompasses analysis of website performance, social media engagement, email marketing effectiveness, online advertising efficiency, analytics insights, mobile marketing strategies, content marketing efforts, automation, and many other aspects. Additionally, evaluating the impact of these technologies on consumer experience and competitiveness is crucial.

In the face of the massive influx of information, it's essential to conduct analysis, grouping, and systematization to gain valuable insights and make informed decisions in business [1]. Cluster analysis allows for the identification of subgroups or patterns within the data, which helps in understanding their structure and regularities. Conducting analysis and grouping of information allows achieving several important goals [2, 3]. Firstly, it helps identify key trends and patterns in the use of digital tools in the marketing activities of enterprises. Secondly, it enables conducting comparative analysis among different groups of companies, allowing to identify the most effective strategies and practices. For example, in the source [4], cluster analysis method was used to group European countries in order to identify characteristics of social protection policies within EU countries, enabling comparative and correlative analysis. And finally, cluster analysis facilitates the identification of opportunities for optimizing the use of digital tools and developing personalized approaches to marketing strategy. Researchers Shpak et al. [5] demonstrated the effectiveness of using cluster analysis in developing principles for assessing the value of products of IT enterprises and the effectiveness of applied business models.

Thus, the systematization and analysis of information using cluster analysis are key stages in the process of improving the marketing strategy of enterprises aimed at achieving competitive advantage and sustainable growth in the digital era. Data collection and analysis help obtain an objective picture of the utilization of digital technologies in the marketing activities of enterprises. Based on this data, a strategy can be developed for further development and enhancement of the company's marketing activities, taking into account the conditions of digital transformation.

Taking into account the considerations outlined, the purpose of the study is to systematize and analyze the level of utilization of digital tools in the marketing activities of enterprises in Ukraine and European Union countries using the method of cluster analysis. This research aims to identify groups of countries with similar approaches and levels of using digital tools in marketing activities of enterprises in Ukraine and EU countries. Grouping countries will help us understand the similarity in their approach to the use of digital tools and identify differences and peculiarities among market segments.

2. Related works

Analysis of scientific sources helps to understand a wide range of approaches and practices in the use of digital tools in the marketing activities of enterprises. Research enables the identification of various strategies used by companies to promote products and services in the online environment, including through the use of content marketing, social media, electronic distribution channels, mobile applications, and other digital platforms. Studying the impact of digitalization on the marketing activities of enterprises, researchers Alonso-Garcia et al. [6] developed a reference model that allows understanding the factors influencing the multi-channel management of an organization in a business-to-business (B2B) context. Another group of researchers, Kljucnikov et al. [7], studying the impact of marketing tools' utilization by small and medium enterprises on their innovation activities, identified a positive influence of using technologically enabled marketing channels compared to traditional ones. In the context of studying factors influencing the development of innovation networks, Prokopenko O. and Omelyanenko V. [8] emphasize the significant role of relationship marketing, which involves building long-term mutually beneficial relationships with key business partners. The necessity of employing digital tools to enhance the efficiency of systematic organization in managing logistical flows is also substantiated by researchers [9]. This is particularly crucial in the context of modern business, where the speed, accuracy, and efficiency of executing logistical operations are paramount for satisfying customer needs and ensuring the competitiveness of enterprises. Researchers Kisiołek et al. [10] proposed a conceptual model of digital marketing communication in higher education institutions, arguing that the use of digital marketing plays a key role in promoting their educational services, improving communication with students, and creating a positive image in the market.

Studying scientific sources allows understanding which digital tools influence consumer behaviour in online environments, their advantages, and limitations. Digital tools, such as social media, can make products and services more accessible to a wide range of consumers and enable them to make purchases and obtain information at any time and from any location [11]. However, digital tools play a crucial role not only in facilitating trade but also in gathering and analyzing market information about trade. Researchers Lovrić et al. [12] demonstrate that many social network analysis procedures can be applied in the field of international trade of forest products. According to them, social network analysis, compared to statistical analysis, allows for a more detailed understanding of the structure of the international trade network.

Researching scientific sources confirms the significance of applying various econometric and mathematical models to determine the effectiveness of utilizing digital tools in enterprise activities [13, 14]. Econometric and mathematical models provide analytical tools for studying various aspects of the effectiveness and performance of digital marketing strategies and technological innovations [15, 16]. In particular, the use of cluster analysis is one of the effective methods in researching the effectiveness of utilizing digital tools in the marketing activities of enterprises [17-19]. Cluster analysis allows grouping similar objects into classes or clusters based on common characteristics, helping to understand the

diversity of the audience and optimize marketing strategies considering the individual needs and interests of each segment.

3. Methods

Cluster analysis method was used to evaluate the utilization of digital tools in the marketing activities of enterprises in Ukraine and EU countries. Cluster analysis is a statistical method used to group objects into similar clusters based on their similarity. This method helps identify natural relationships and structure in data where predefined categories or labels are not known in advance.

The main steps of cluster analysis are as follows:

1. The first step is selecting the similarity metric. For our analysis, we have chosen the Euclidean distance, which measures the distance between two points in space. This metric originated from geometric theory and is used in various fields of science and engineering, including mathematics, physics, computer science, and statistics. It helps determine how close or far apart objects are in space.
2. The next step is selecting the clustering method. There are several methods of cluster analysis, such as hierarchical clustering and k-means clustering. For our study, we have utilized the hierarchical clustering method, which groups objects into clusters based on their similarity. This method creates a hierarchical structure of clusters, where each object is initially considered as a separate cluster and then merged into larger clusters, gradually combining similar groups of objects [20, 21]. This process continues until all objects are merged into one large cluster, or until a predetermined number of clusters is reached. For merging clusters into larger clusters during the hierarchical clustering process, the agglomerative hierarchical clustering method is utilized, specifically Ward's method. Ward's method determines which pairs of clusters should be merged in a way that minimizes the increase in mixed dispersion of the new cluster. Typically, this involves calculating the average dispersion for each cluster and the dispersion of the new cluster formed by their merger. The merging occurs for the pair of clusters with the smallest increase in dispersion [22].
3. The determination of the number of clusters is done graphically by constructing a dendrogram of object merging. A dendrogram is a graphical representation of the results of hierarchical clustering. It is a tree-like diagram that illustrates the hierarchical structure of clusters and helps visualize how objects (or groups of objects) are merged into larger clusters during the clustering process.
4. Cluster analysis was performed using the Statistica software, which is an integrated data analysis and statistics software developed by StatSoft, Inc. With Statistica, cluster analysis and hierarchical clustering for data can be easily conducted, providing options for selecting different clustering methods, computing distances, and visualizing results.
5. Evaluation and interpretation of the results.

The data used for this study were obtained from the website of the European Commission at https://ec.europa.eu/. This website serves as a reliable source of statistical and analytical information about the economy, business environment, and marketing trends of European Union countries. The data gathered from this source enabled an objective and cluster analysis of the use of digital tools in the marketing activities of EU enterprises, as well as a comparison of their practices with Ukrainian standards. With these data, the study can provide valuable insights and recommendations for the development of marketing strategies both in the European Union and in Ukraine. Information about the state and dynamics of the use of information and communication technologies in the marketing activities of Ukrainian enterprises was obtained from the website of the State Statistics Service of Ukraine in the section "Economic Statistics / Economic Activities / Information Society" [23].

4. Results and discussions

To describe the level of digitization of enterprises, particularly in EU countries, the Digital Intensity Index (DII) is used [24]. This composite index is derived from surveys regarding the use of ICT and electronic commerce in enterprises. The DII is one of the key indicators of effectiveness in the context of the Digital Decade, which outlines European ambitions regarding digital technologies by articulating a vision for digital transformation and specific goals for 2030 across four key areas: skills, infrastructure, digital enterprise transformation, and government services. The indicator measures the adoption of various technologies by enterprises and was first compiled in 2015.

Denmark, Sweden, and Finland have the highest Digital Intensity Index, indicating a high level of digital readiness in these countries and a very high level of information and digital technology utilization by enterprises. These countries integrate digital solutions and innovations into their economic processes, contributing to increased productivity and competitiveness of business activities. Conversely, countries such as Slovakia, Luxembourg, Italy, France, Greece, Bulgaria, and Romania exhibit very low levels of enterprise digitization, demonstrating lower readiness to adopt modern digital technologies and information solutions in their business operations.

The measurement of the degree of digitization of enterprises is an important aspect for understanding the economic development of countries, as digital transformation can enhance the efficiency of business processes and provide new opportunities for innovation and development [25], including marketing activities. Therefore, countries with low levels of digital intensity require more attention and investment in digital development to ensure their competitive position in the global market.

The clustering was conducted based on indicators characterizing the level of digital tools utilization in the marketing activities of enterprises in the countries (Table 1):

x1 – the proportion of enterprises with access to the Internet, %;
x2 – the proportion of enterprises with a website in the total number of enterprises, %;
x3 – the proportion of enterprises whose website enables ordering or booking online, %;

x4 – the proportion of enterprises using social media in the total number of enterprises, %;
x5 – the proportion of enterprises purchasing cloud computing services, including email, in the total number of enterprises, %;
x6 – the proportion of enterprises purchasing cloud computing services, including customer/client information management software, in the total number of enterprises, %;
x7 – the proportion of enterprises conducting big data analysis in the total number of enterprises, %;
x8 – the proportion of enterprises using AI technologies for marketing or sales in the total number of enterprises, %.

Table 1
The initial indicators for clustering European Union countries and Ukraine based on the level of usage of digital tools in the marketing activities of enterprises, %

N	Countries	x1	x2	x3	x4	x5	x6	x7	x8
		2021	2021	2021	2021	2021	2021	2020	2021
	European Union – 27 countries	98.3	77.7	21.7	58.7	32.4	10.9	14.2	1.7
C_1	Belgium	100.0	:	:	76.2	43.5	24.2	22.9	1.5
C_2	Bulgaria	96.1	51.9	12.5	38.9	10.2	2.6	6.3	0.8
C_3	Czech Republic	96.0	82.8	33.9	51.1	35.3	7.5	9.1	1.2
C_4	Denmark	99.9	:	:	77.4	55.9	24.6	27.0	5.4
C_5	Germany	99.2	89.4	25.5	56.7	27.0	8.8	17.8	1.3
C_6	Estonia	97.0	:	:	51.2	44.6	11.1	9.9	0.9
C_7	Ireland	98.3	82.4	26.6	63.7	47.0	14.4	22.7	2.6
C_8	Greece	98.7	61.5	20.0	55.7	17.4	6.8	12.9	1.0
C_9	Spain	98.4	76.8	16.0	66.6	25.3	11.8	9.0	1.7
C_10	France	98.9	70.5	20.0	61.4	19.8	8.9	21.7	1.2
C_11	Croatia	96.1	67.8	16.9	53.6	34.6	8.0	13.6	1.4
C_12	Italy	98.7	74.8	17.6	56.2	57.9	11.7	8.6	1.5
C_13	Cyprus	98.4	69.4	14.1	77.1	41.9	9.8	6.2	0.8
C_14	Latvia	100.0	67.8	13.8	57.7	22.5	4.8	8.5	1.0
C_15	Lithuania	100.0	77.9	18.9	57.6	27.0	5.9	10.5	1.2
C_16	Luxembourg	98.5	80.8	16.9	68.4	27.0	11.2	18.7	1.8
C_17	Hungary	93.5	63.4	19.3	47.7	19.0	5.4	7.0	1.3
C_18	Malta	97.4	82.3	37.5	84.4	50.7	18.7	30.0	3.3
C_19	Netherlands	100.0	92.3	37.1	79.7	53.4	31.6	27.2	4.5
C_20	Austria	99.3	91.0	25.4	65.2	28.5	9.1	8.7	2.6
C_21	Poland	98.5	71.4	13.0	45.6	22.6	5.0	8.5	1.1
C_22	Portugal	96.6	62.0	15.4	59.4	30.8	9.2	10.6	6.7
C_23	Romania	90.8	51.2	23.2	36.1	11.4	3.8	5.1	0.5

C_24	Slovenia	99.5	83.3	21.9	58.9	31.4	9.0	6.6	3.1
C_25	Slovakia	94.9	75.7	24.0	45.2	31.7	10.3	5.6	1.6
C_26	Finland	100.0	96.1	29.0	79.0	64.0	30.9	21.6	4.9
C_27	Sweden	99.3	90.8	32.0	80.1	65.5	28.6	19.2	3.2
C_28	Ukraine	86.6	35.3	10.4	30.1	6.6	2.8	12.7	:

The website is an important and necessary digital marketing tool for most modern businesses. It serves various functions, including creating an online presence, providing information to customers, selling products and services, generating leads, social media and SEO, and analytics [26, 27]. Through the website, a business can interact with its audience, develop its brand, and refine its marketing strategies to succeed in the digital age. According to Eurostat [28], the share of enterprises in EU countries with a website, as of 2021, was 77.7%. This indicates the widespread use of the Internet and the importance of online presence for businesses. Finland (96.1%), the Netherlands (92.3%), Sweden (90.8%), Austria (91%), and Germany (89.4%) have the highest percentages of enterprises using websites for marketing and product sales. This reflects active development in digital technologies and a high level of digital readiness in these countries. Romania (51.2%) and Bulgaria (51.9%) have the lowest percentages of enterprises using websites. This suggests opportunities for further development of digital technologies and digital transformation in these countries.

Overall, social media has become an essential part of marketing strategy for businesses of any scale and industry. Their effective use can lead to increased brand awareness [29], higher sales, and strengthened market positions. According to Eurostat data [30], the share of enterprises in EU countries using social media as of 2021 was 58.7%. This indicates an average level of social media usage among enterprises. Norway (84.7%), Malta (84.4%), Sweden (80.1%), the Netherlands (79.7%), Denmark (77.4%), Cyprus (77.1%), and Belgium (76.2%) have the highest percentages of enterprises using social media for marketing and product sales. Romania (36.1%), Bulgaria (38.9%), Slovakia (45.2%), and Poland (45.6%) have the lowest levels of enterprises using social media. This suggests opportunities for further growth in social media usage for marketing and sales in these countries. These data highlight the differences in the levels of social media usage for marketing activities among different EU countries and underscore the importance of digital marketing in modern business.

A significant indicator for assessing the level of digital transformation and the use of internet platforms in marketing is the dynamics of the share of enterprises engaged in e-commerce. This indicator reflects how quickly enterprises adopt the Internet as a sales channel and interact with consumers. The growth in the share of enterprises using e-commerce is a result of the development of digital technologies, changes in consumer habits, and the globalization of markets [31-33]. The general trend is an increase in the share of enterprises in EU countries using e-commerce, as this sector offers many advantages in accessing new markets, reducing costs, and improving business efficiency. However, the level and pace of growth vary depending on each specific country and economic sector. The highest share of enterprises engaged in e-commerce sales, with a share of at least 1% of turnover, as of 2022, is observed in EU countries such as Sweden

(36.6%), Denmark (35.6%), Ireland (35.3%), Lithuania (32%), and Malta (30%). For other countries, this percentage is below 30%, with the lowest percentage of enterprises engaged in e-commerce sales characteristic of Luxembourg (8%).

On Figure 1, the dendrogram illustrating the clustering of EU countries and Ukraine based on the level of digital tools utilization in the marketing activities of enterprises is presented.

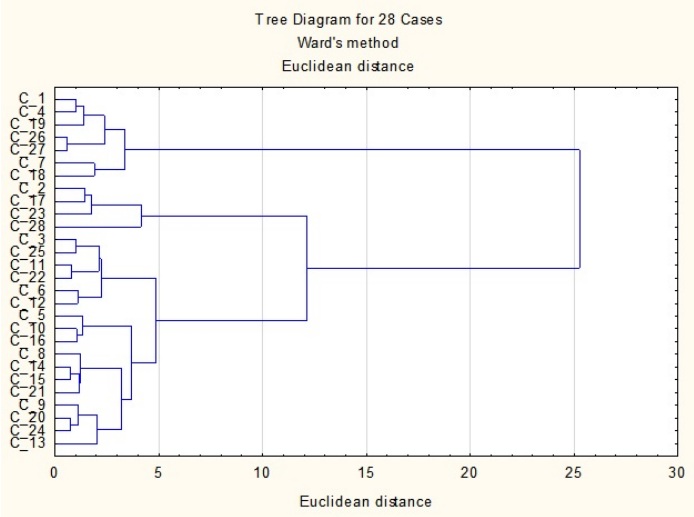

Figure 1: Dendrogram illustrating the clustering of EU countries and Ukraine based on the level of digital tools utilization in the marketing activities of enterprises.

Based on the graphical representation of the clustering of EU countries and Ukraine (Figure 1), we can distinguish three clusters of countries based on the level of utilization of digital tools in the marketing activities of enterprises.

Table 2 presents the distribution of EU countries and Ukraine into clusters based on the level of utilization of digital tools in the marketing activities of enterprises according to statistical data from 2020-2021.

Table 2

The distribution of EU countries and Ukraine into clusters based on the level of utilization of digital tools in the marketing activities of enterprises

Countries	Conventional notation	Indicator values							
		x1	x2	x3	x4	x5	x6	x7	x8
I cluster									
Belgium	C_1	100.0	:	:	76.2	43.5	24.2	22.9	1.5
Denmark	C_4	99.9	:	:	77.4	55.9	24.6	27.0	5.4
Netherlands	C_19	100.0	92.3	37.1	79.7	53.4	31.6	27.2	4.5
Finland	C_26	100.0	96.1	29.0	79.0	64.0	30.9	21.6	4.9
Sweden	C_27	99.3	90.8	32.0	80.1	65.5	28.6	19.2	3.2
Ireland	C_7	98.3	82.4	26.6	63.7	47.0	14.4	22.7	2.6

Malta	C_18	97.4	82.3	37.5	84.4	50.7	18.7	30.0	3.3
				II cluster					
Czech Republic	C_3	96.0	82.8	33.9	51.1	35.3	7.5	9.1	1.2
Slovakia	C_25	94.9	75.7	24.0	45.2	31.7	10.3	5.6	1.6
Croatia	C_11	96.1	67.8	16.9	53.6	34.6	8.0	13.6	1.4
Portugal	C_22	96.6	62.0	15.4	59.4	30.8	9.2	10.6	6.7
Estonia	C_6	97.0	:	:	51.2	44.6	11.1	9.9	0.9
Italy	C_12	98.7	74.8	17.6	56.2	57.9	11.7	8.6	1.5
Germany	C_5	99.2	89.4	25.5	56.7	27.0	8.8	17.8	1.3
France	C_10	98.9	70.5	20.0	61.4	19.8	8.9	21.7	1.2
Luxembourg	C_16	98.5	80.8	16.9	68.4	27.0	11.2	18.7	1.8
Greece	C_8	98.7	61.5	20.0	55.7	17.4	6.8	12.9	1.0
Latvia	C_14	100.0	67.8	13.8	57.7	22.5	4.8	8.5	1.0
Lithuania	C_15	100.0	77.9	18.9	57.6	27.0	5.9	10.5	1.2
Poland	C_21	98.5	71.4	13.0	45.6	22.6	5.0	8.5	1.1
Spain	C_9	98.4	76.8	16.0	66.6	25.3	11.8	9.0	1.7
Austria	C_20	99.3	91.0	25.4	65.2	28.5	9.1	8.7	2.6
Slovenia	C_24	99.5	83.3	21.9	58.9	31.4	9.0	6.6	3.1
Cyprus	C_13	98.4	69.4	14.1	77.1	41.9	9.8	6.2	0.8
				III cluster					
Bulgaria	C_2	96.1	51.9	12.5	38.9	10.2	2.6	6.3	0.8
Hungary	C_17	93.5	63.4	19.3	47.7	19.0	5.4	7.0	1.3
Romania	C_23	90.8	51.2	23.2	36.1	11.4	3.8	5.1	0.5
Ukraine	C_28	86.6	35.3	10.4	30.1	6.6	2.8	12.7	:

Figure 2 illustrates the cartogram of dividing EU and Ukraine into clusters based on the level of digital tools utilization in the marketing activities of enterprises.

Based on the provided data and cluster analysis, conclusions can be drawn regarding the level of digital tools utilization in the marketing activities of enterprises in the countries within the three clusters:

Countries (Belgium, Denmark, the Netherlands, Finland, Sweden, Ireland, Malta) are classified into Cluster I, which demonstrates a high level of digital tools utilization in the marketing activities of enterprises. These countries exhibit the highest activity in this aspect, reflected in the high values of the assessed indicators. Located in the northern part of Europe (except for Malta), they share borders with the Baltic Sea and the North Sea. This region is renowned for its high level of development and a history of cooperation. An important characteristic of these countries is their proximity in terms of population density, high standard of living, and similarity in economic and social models. Additionally, they frequently collaborate within various international organizations and develop joint strategies concerning security, economic development, and other aspects of mutual interest.

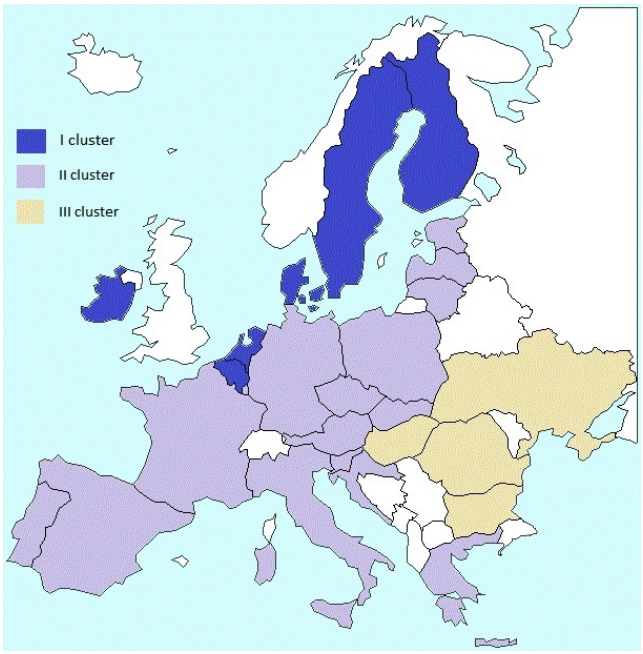

Figure 2: Cartogram of dividing EU countries and Ukraine into clusters based on the level of digital tools utilization in the marketing activities of enterprises

Countries in Cluster II are characterized by a moderate level of utilization of digital tools in the marketing activities of enterprises. They demonstrate average values of the assessed indicators.

Countries in Cluster III (Bulgaria, Hungary, Romania, Ukraine) exhibit the lowest level of utilization of digital tools in the marketing activities of enterprises. They are characterized by low values of the assessed indicators. These countries are located in Eastern Europe and share several common characteristics and factors that unite them, including geographic proximity and historical ties. They hold significant geopolitical importance in the Eastern European region and often participate in regional and international cooperation and initiatives to enhance stability and development in the region.

For the identified clusters of countries, the average values for each indicator for each cluster have been determined. The results are presented in Table 3. A graphical representation of the average standardized values of the indicators for each cluster is shown in Figure 3.

Table 3

Average values of indicators for the identified clusters of countries in the EU and Ukraine based on the level of usage of digital tools in the marketing activities of enterprises

Cluster	The number of countries	The average values of indicators							
		x1	x2	x3	x4	x5	x6	x7	x8
I	7	99.3	88.8	32.4	77.2	54.3	24.7	24.4	3.6
II	17	98.2	75.2	19.6	58.1	30.9	8.8	11.0	1.8
III	4	91.8	50.5	16.4	38.2	11.8	3.7	7.8	0.9

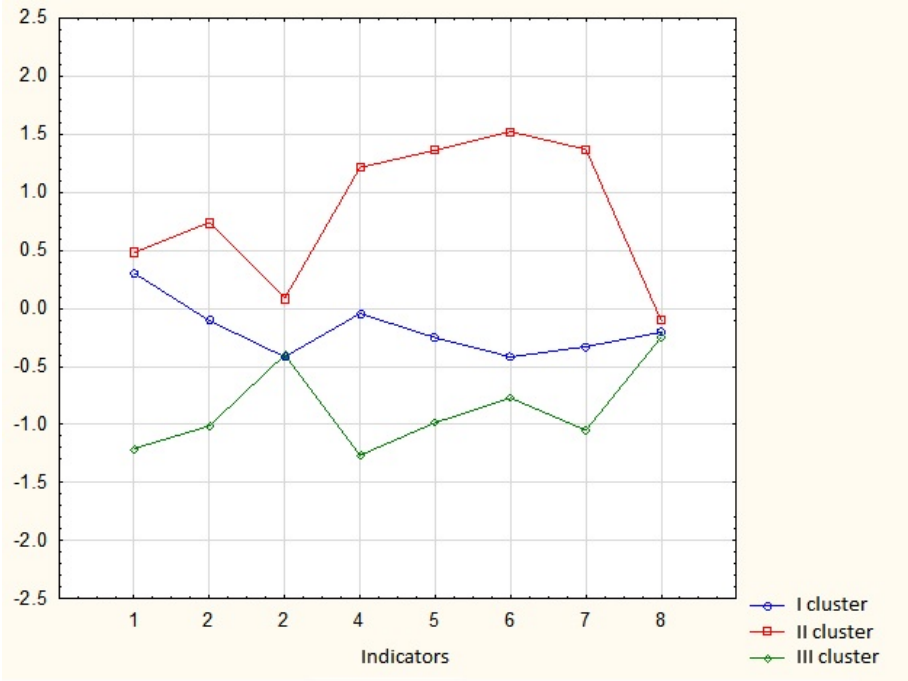

Figure 3: Graphical representation of the average standardized values of indicators for each cluster of EU countries and Ukraine

Based on the average values of indicators for the identified clusters of EU countries and Ukraine regarding the level of use of digital tools in the marketing activities of enterprises, conclusions can be drawn:

- the average values of indicators for Cluster I indicate a high level of use of digital tools in the marketing activities of enterprises. These countries are characterized by the highest average values for almost all eight indicators, indicating their high digital readiness in the marketing sphere;
- the average values of indicators for Cluster II also indicate a moderate level of readiness for using digital tools in marketing activities. These countries have average values of indicators higher than those in the third cluster but lower than those in the first cluster
- the average values of indicators for Cluster III indicate the lowest level of utilization of digital tools in the marketing activities of enterprises among all three clusters. Countries in this cluster are characterized by the lowest average values of practically all eight indicators, indicating the need for further development of digital marketing and implementation of modern tools in the marketing activities of enterprises.

As we can see, there is a significant difference in the level of digital readiness among the different clusters of countries. The first cluster demonstrates the highest readiness for using digital tools in marketing activities, the second cluster has average indicators, while the third cluster requires improvement in this aspect.

5. Conclusions

Cluster analysis has identified three groups of EU countries regarding the level of utilization of digital tools in the marketing activities of enterprises. Specifically, Cluster I includes countries with a high level of usage of digital tools in enterprise marketing activities. Cluster II consists of countries with average utilization of digital tools in marketing activities. And Cluster III countries have the lowest level of utilization of digital tools in enterprise marketing activities. It was found that the largest gap is evident in the average values of almost all assessed indicators for each of the clusters. Only indicators such as x3 – the share of enterprises whose website facilitates online ordering or booking, and x8 – the share of enterprises using AI technologies for marketing or sales, do not show significant differences among countries.

The overall conclusion demonstrates a significant difference in the level of digital tools utilization among the clusters of the studied countries. Ukraine is classified into the III cluster along with countries such as Bulgaria, Hungary, and Romania. The comprehensive analysis of indicators in this cluster indicates that Ukraine has the lowest level of digital tools utilization in marketing activities among the countries represented in this list. Specifically, Ukraine has low values across almost all indicators, indicating a lag in the use of digital tools in marketing compared to other EU countries. This serves as a signal for Ukraine regarding the necessity of further development and implementation of digital marketing tools to enhance the competitiveness of enterprises in the international market, particularly in the context of European Integration, and to improve marketing practices overall.

Among the limitations of this study, it is worth noting the following: (1) geographic limitations – the study is confined to Ukraine and European Union countries. This limitation allowed focusing on the context of Ukraine and European Union countries, providing a deeper understanding of local peculiarities, legislation, cultural differences, and economic environments. However, the geographical limitation prevented the consideration of the unique characteristics of marketing activities in other regions of the world, such as Asia, North America, or Africa. This limitation may lead to missing potential innovative approaches and best practices that could be utilized in marketing. For instance, the study does not account for the rapidly growing influence of Chinese technology companies in the field of digital marketing, which could be a significant factor for international businesses; (2) sectoral specificity – the assessment was primarily conducted in the B2B and B2C services and goods sectors, which may lead to limited representativeness of the results. The findings may not reflect the wide range of digital tools usage in marketing across various sectors of the economy.

The practical significance of the study lies in several key aspects: (1) the research results provide businesses with an informational basis for formulating strategies regarding the utilization of digital tools in marketing activities. Cluster analysis allows for the identification of groups of enterprises with similar characteristics in the use of digital instruments and the development of individual strategies for each of them; (2) understanding how enterprises utilize digital tools in marketing activities allows for the identification of the most effective methods of internet marketing and the resources being

utilized. This helps optimize marketing budgets and resources to achieve better results; (3) cluster analysis enables the identification of niches and gaps in the utilization of digital tools in marketing activities compared to competitors. This can facilitate the development of unique propositions and strategies, allowing enterprises to stand out in the market and enhance their competitiveness. Therefore, conducting analysis using cluster analysis method has direct practical significance for enterprises, allowing them to more effectively utilize digital tools in marketing activities and achieve better results.

Further research could focus on studying cultural and regional variations in the use of digital tools in marketing by enterprises, including comparisons between countries and regions. Efforts could be directed towards developing new forecasting models to identify future trends in the use of digital tools in marketing. This would help enterprises prepare for changes and adapt their strategies accordingly.

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