UDC 351.858:316, 330:331

DOI

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**COMPARING THE E-COMMERCE APPEAL OF UKRAINE AND GERMANY**

The article explores the main factors influencing the development of e-commerce and the challenges faced in this process. It proposes a system of 9 additional criteria for assessing the quality and convenience of e-commerce in different countries: 1) infrastructure, 2) healthcare services, 3) housing, 4) small and medium-sized businesses, 5) climate, 6) consumer basket, 7) taxes and fines, 8) degree of citizen freedom, and 9) right to information. A comparative analysis of e-commerce in Germany and Ukraine was conducted using this system, focusing on its state, convenience, profitability, and growth prospects. The analysis was informed by personal experience living in both countries, with experts evaluating the criteria and assigning specific “weights” to each. After normalizing the evaluations and weights through the weighted averaging method, overall quality criteria for e-commerce in each country were established. The results show that e-commerce is more attractive in Ukraine due to lower taxes, greater business freedom, better mobile connectivity, and faster Internet delivery compared to Germany. The article suggests extending this comparison to other Western European countries, using the proposed methods. It also highlights the importance of practical experience for researchers, stressing the need for extended living and working experience in the countries under study to ensure accurate results.

***Keywords:*** *Ukraine, Germany, attractiveness of countries, e-commerce, scales, expert evaluations, integral criterion.*

***JEL classification****: D12, F14, F23, O.*

**ПОРІВНЯННЯ ПРИВАБЛИВОСТІ ЕЛЕКТРОННОЇ КОМЕРЦІЇ УКРАЇНИ ТА НІМЕЧЧИНИ**

У статті розглядаються основні чинники, що сприяють розвитку електронної торгівлі та онлайн-бізнесу, а також перешкоди, з якими стикаються підприємці в цьому процесі. Пропонується система з 9 значущих критеріїв для оцінки якості та зручності ведення електронної торгівлі в різних країнах: 1) інфраструктура, 2) медичні послуги, 3) власне житло, 4) малий і середній бізнес, 5) клімат, 6) споживчий кошик, 7) податки та штрафи, 8) ступінь свободи громадянина, 9) право на інформацію. На основі цієї системи проведено порівняльний аналіз стану, зручності, прибутковості, надійності та перспектив розвитку електронної комерції в Німеччині та Україні. Автори, опираючись на особистий досвід проживання в цих країнах, проаналізували зазначені критерії для визначення привабливості електронної комерції в кожній з них. Досвідчені експерти оцінили ці критерії для обраних країн і присвоїли кожному з них відповідні «ваги». Після нормалізації оцінок і ваг за допомогою методу згортки був розроблений інтегральний критерій якості електронної комерції для кожної країни. Результати показали, що електронна комерція є більш привабливою в Україні завдяки нижчим податкам, більшій свободі ведення бізнесу, кращому мобільному зв’язку та швидшій доставці товарів порівняно з Німеччиною. Згідно з отриманими даними, пропонується провести аналогічне порівняння для інших країн Західної Європи та не тільки, використовуючи запропоновані методи. Важливим аспектом є наявність практичного досвіду у дослідників, оскільки досвід життя та роботи в обраних країнах необхідний для досягнення точних і надійних результатів.

**Ключові слова:** Україна, Німеччина, привабливість країн, електронна комерція, експертні оцінки, інтегральний критерій.

**Introduction**

E-commerce is one of the key messages of our era. It is rapidly evolving and improving, with many factors influencing its growth and scale. Researchers typically, when analyzing factors for the development of e-commerce and obstacles on this path, mention either technical conditions (legislation, tax rates, internet connectivity and network bandwidth, cybersecurity, workers’ skill level and education, etc.) or non-technical ones related to customer service quality, the quality of websites on e-commerce platforms, the use of interesting innovations that attract customers, and so on.

However, other factors also influence the level of e-commerce, as we have experienced firsthand: geographical, climatic, domestic, infrastructural, health-related, and others. These factors affect the speed and cost of goods delivery, health conditions and work capacity, time for business activities, work efficiency, and more.

Until recently, Ukrainians had little knowledge of how e-commerce was developing in European countries, what conditions were in place (whether they were better or worse than in Ukraine), and what obstacles existed, as they did not have the opportunity to temporarily and massively go abroad and gain firsthand experience. Since 2022, due to the war, such an opportunity has arisen.

In this article, based on scientific research and the experience of living in European countries, we will present the criteria that influence the development and conditions of private e-commerce. By creating an integral quality criterion, we will provide an overall assessment of the attractiveness of doing e-commerce in Germany and Ukraine. This analysis seems relevant in the context of Ukraine’s possible accession to the European Union and, accordingly, the adoption or rejection of certain economic, legal, domestic, and other aspects.

**Literature review**

There are not many studies dedicated to the development and analysis of the attractiveness level of countries. Researchers typically assess the attractiveness of a particular country through the lens of various criteria: the level of economic openness [7]; relevant factors that are components of the integral indicator of rating assessment [8], [12]; moral components [29]; external informational influences [4] (we would add – also the degree of self-promotion by the state); the banking system and business environment [6]; economic, political, and social characteristics [25]; the investment climate of the country and individual regions [15], [5], [11], [28], [2]; outsourcing attractiveness [31]; the competitiveness index [31]; the global competitiveness index [13]; the index of external and internal threats and the level of economic freedom [3]; the number of talents, innovation index, knowledge index [3, с. 12], and others.

However, we found no studies in which the attractiveness of countries was evaluated in relation to the convenience of conducting e-commerce. Most often, external indicators are compared, global leaders in terms of e-commerce volume are identified, the pace of its development is analyzed, and various obstacles and measures to overcome them are studied. Our goal is to identify the “human factor” of e-commerce, the degree of convenience, and the potential for its fastest growth.

**The research objective**

The objective of this research is to establish a set of everyday (human) criteria for evaluating the attractiveness of countries for e-commerce and to perform a comparative analysis of this system with respect to Germany and Ukraine. The following tasks are outlined to achieve this goal: 1) develop a system of criteria that determines the level of attractiveness of countries for conducting electronic business; 2) analyze the proposed indicators using Germany (where most Ukrainian refugees have settled and where optimal living conditions have been established) and Ukraine (a country affected by ongoing conflict) as case studies; 3) normalize qualitative criteria using expert evaluation methods; 4) determine and calculate an integral criterion for the quality and convenience of e-commerce in both countries (Germany and Ukraine); 5) conduct a comparative analysis of the resulting integral criteria to assess the attractiveness of e-commerce in Germany and Ukraine; 6) offer recommendations for applying the proposed e-commerce rating system to other countries.

**Methods**

Several scientific methods were employed in the research process: 1) theoretical Generalization and Classification; 2) comparative Analysis; 3) formalization, Analysis, and Synthesis; 4) Expert Evaluation Method; 5) Multicriteria Analysis Elements.

**The results**

Researchers highlight several external factors that influence e-commerce, including legal aspects, which encompass legislation and regulation; socio-economic factors, which define consumer habits and the economic situation; cultural influences, which account for the preferences and characteristics of different consumer groups; market conditions, which include competition and strategies for positioning products and services; natural factors; and the degree of digitalization.

Among the internal factors are the education of e-commerce workers, the customer-centricity of the company, e-commerce platforms and marketplaces (their type, ease of use, simplicity in mastering, range of services and opportunities, availability of discount systems for purchases, etc.), and electronic payments (integration with well-known payment systems, convenience, and speed of payment processing) [20, с. 38]**.**

Not denying the importance of these influencing factors, based on our experience of temporarily conducting e-commerce in Western European countries (Germany, Austria), we propose adding criteria related to the quality and convenience of life, and thus the ease of conducting e-commerce (Table 1).

Table 1

**System of Criteria for Determining the Attractiveness of Conducting E-Commerce**

|  |  |  |
| --- | --- | --- |
| No. | Criteria | Explanation |
| 1 | Infrastructure | The proximity of stores, clinics, kindergartens, and schools in each city district is crucial as it reduces the time spent on daily needs, which in turn impacts the quality and quantity of electronic transactions. |
| 2 | Medical Services | The availability, speed, proximity, and cost of medical services, as well as the availability of medicines in pharmacies, have a similar impact on a person’s life and, consequently, their ability to engage in e-commerce. |
| 3 | Housing | The cost of renting housing or office space significantly affects e-commerce expenses. |
| 4 | Small and Medium Business | The presence of small service points, such as repair or rental shops, facilitates and reduces living expenses. E-commerce often requires the repair of laptops, phones, and gadgets. If this function is poorly developed, the cost of e-commerce operations significantly increases. |
| 5 | Climate | Weather affects the speed and cost of deliveries. For instance, frequent rain can slow down delivery times and increase costs, along with risks (flights delayed, vehicles in accidents, etc.). |
| 6 | Consumer Basket vs. Average Salary | The higher the prices for food and household items, the lower the net profit from e-commerce. |
| 7 | Taxes and Fines | The size and frequency of taxes and fines significantly affect the income from e-commerce. |
| 8 | Degree of Citizen Freedom | Comfort, personal space, and safety, though implicit, greatly affect e-commerce since it’s operated by people, not robots. |
| 9 | Right to Information | E-commerce requires constant market monitoring, environmental scanning, news updates, and social media engagement to stay informed about market fluctuations and new trends. If access to this information is limited, e-commerce can suffer. |

*Source*: compiled by the authors

This table outlines the factors that influence the attractiveness of conducting e-commerce, considering the impact of daily living conditions and business environment on overall performance.

Let’s analyze the proposed system using the example of two countries: Germany and Ukraine.

1. **Infrastructure**: In Ukraine, it is standard practice to develop the appropriate infrastructure for any construction project. This means that new residential buildings are typically located near essential daily services, such as shops, clinics, pharmacies, kindergartens, and schools. In Germany, there is no such practice, so infrastructure is not necessarily linked to residential areas. In large cities, this can create inconveniences as services may be located far from each other, leading to additional time costs for residents. However, this issue is less pronounced in smaller towns. Conclusion: E-commerce is better conducted in smaller towns where workers have more time available.
2. **Medical Services**: In Germany, accessing social medical care through insurance involves a lengthy wait, ranging from 6 months to a year. In contrast, in Ukraine, medical services covered by insurance are available within a few days. Additionally, unlike Germany, where many medications are only available by prescription, Ukrainian pharmacies allow the purchase of almost any medication without a prescription. In Germany, which has one of the most developed economies in Europe, many medical products are prescription-only. Conclusion: To avoid discomfort related to health and costs, it is advisable to either bring medications with you or avoid getting sick. Otherwise, the balance of trade may sharply decrease.
3. **Housing**: In Germany, the rent for a two-bedroom apartment in large cities ranges from 1,500 to 2,000 euros per month, with an average salary of 2,665 euros (56.28% of the minimum). In Ukraine, the rent for an apartment in large cities ranges from 10,000 to 20,000 UAH (295–590 euros), with an average salary of 16,836 UAH or 402 euros (59% of the minimum). Thus, these figures are approximately equivalent. However, in Ukraine, over 90% of residents own their homes, while in Germany, only 42% do.
4. Small and Medium-sized Enterprises (SMEs): In Ukraine, SMEs contribute 50-70% to the country’s Gross Domestic Product (GDP), with the share of small businesses accounting for approximately 16% of GDP [3], [20]. In Germany, small and medium-sized businesses contribute 46.7% to GDP [27]. However, the limited presence or weak development of small repair services, home appliance maintenance, and minor retail indicates that the role of small businesses is less prominent compared to Ukraine. This is felt in e-commerce when, for instance, technical issues with equipment (e.g., laptops, mobile phones, tablets) often necessitate purchasing new items, leading to additional expenses.
5. Climate: Germany is situated in a temperate continental climate zone. However, the weather in northern regions is significantly influenced by the Baltic and North Seas, resulting in frequent rain in autumn and winter [10]. ]. Ukraine, also located in a temperate zone, experiences much less rainfall and more sunshine [9]. Conclusion: For e-commerce, the location is less critical in Ukraine. In Germany, it is preferable to be in the southern regions, as the persistent rain in the northern areas can complicate and increase the cost of delivery.
6. Consumer Basket: In 2023, the minimum food basket in Ukraine, costing 2,587 UAH, included 297 goods and services [22], [21]. In Germany, the basket contained 475 items and cost between 1,300 and 3,200 euros per month, depending on the location [26]. Conclusion: For Ukrainian refugees engaged in e-commerce in Germany, the significantly higher costs for food and household items can sharply reduce profits.
7. Taxes and Fines: In Germany, business taxes include a corporate tax of 15%, a capital gains tax (dividends) of 25%, and VAT of 19% [16]. totaling 54%. In Ukraine, there is a single tax of 302.80 UAH per month. Compared to Ukraine, fines in Germany are considerably higher [30], [24]. Conclusion: To avoid erasing the gains from an e-business, it may be necessary to find ways to circumvent taxes and to be cautious on the roads: allowing for more delivery time while avoiding fines.
8. Freedom and Safety: Compared to Ukraine, Germany has a range of restrictions that significantly impact e-commerce: a) There are issues with service provision, particularly in goods delivery and banking services; delivery may be too slow, and internet connectivity may not always be reliable, impeding the development of e-commerce. b) The postal service in Germany is much slower than in Ukraine, and Germany is not a member of EMS, the international express delivery service. c) Mobile connectivity and internet quality in Germany lag behind those in Ukraine, which can hinder electronic documents and other online procedures [18, с. 955].
9. Right to Information: In Germany, there are restrictions on reporting negative events (e.g., fires, accidents, strikes) which can impede e-commerce development. For example, a prolonged strike might close roads for an entire day, and due to a lack of information, vehicles carrying goods might get stuck in traffic or have to take longer routes, causing significant delays. Conclusion: In Germany, logistics should be planned with allowances for unexpected events, as timely information might not always be available.

In summary, we have developed a multi-criteria model with 9 indicators for comprehensively assessing the attractiveness of countries for e-commerce. Since the criteria have different units of measurement, they need to be normalized to a common dimensionless scale using expert evaluation methods. The following algorithm will be applied:

1. Obtain expert evaluations of the proposed criteria for the two countries within the range of 0 to 10 and calculate the group (average) expert evaluations;
2. Normalize them (i.e., convert them to dimensionless values);
3. Obtain from the experts a ranking of the criteria by decreasing significance (assign them weight coefficients);
4. Determine the group (average) weights of the criteria and normalize them;
5. Develop an integral criterion that takes into account the obtained normalized evaluations and weights;
6. Calculate its numerical value for Ukraine and Germany.

Step 1. To evaluate the criteria of the proposed “e-commerce attractiveness model” for Germany and Ukraine, we involved experts from three different groups: 1) Ukrainians who have been citizens of Germany for over 20 years; 2) Ukrainians with refugee status who moved to Germany due to the war in Ukraine and returned home after two years; 3) Ukrainian refugees who are still living in Germany. Involving purely German experts is not meaningful, as they, lacking experience of living and working in Ukraine, cannot compare its conditions with German standards.

The group evaluation of experts is calculated using the formula:

 (1)

where *fik* – the evaluation (score) provided by the *k*-th expert for the *i*-th criterion *fi*  *n* – is the number of criteria and *р* – is the number of experts.

The second step is normalization of the scores (i.e., converting them to dimensionless values). The most commonly used types of normalization are absolute, relative, and natural normalization. It is assumed that the first *l* criteria are to be maximized, while the remaining (*n* – *l*) criteria are to be minimized. According to the principle of maximum efficiency (criteria evaluations of alternatives should have a positive component), the normalized criteria are determined as follows [14].

Absolute Normalization:  (2)

Relative Normalization:

 (3)

Natural Normalization:

 (4)

*where fij* – is the value of the *j*-th criterion for the *i*-th alternative, ;  – the maximum and minimum values of the criteria for all alternatives:

 (5)

Normalization according to formula (4) is known as Savage normalization. Absolute normalization retains the units of measurement for the criteria. Relative normalization has the drawback of being significantly dependent on the maximum possible level of the criteria, which is determined by the conditions of the problem [18], [19, c. 82-84].

If the Decision-Making Process (DMP) defines (subjectively) the levels of “ideal” quality of alternatives by setting fixed values, then in formula (3) the values ​ and ​ are replaced with these fixed values. A significant drawback of this normalization method is the difficulty and subjectivity in determining these fixed values . This leads to subjective normalized quality assessments of strategies.

Normalized values according to natural normalization fall  within the range [0; 1] and are dimensionless, which explains their wide practical use.

In our case , that is the interval of evaluation is from 0 to 10. Therefore, formula (8) will take the following form:

 (6)

The obtained values of the group (average) normalized scores, which are calculated using formula (9) and in turn computed based on formula (1), are presented in Table 2.

**Table 2**

**Group Expert Normalized Scores of the Criteria**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Criteria  Country | Infra-structure | Medi-cal ser-vices | Own housing | Small business | Cli-mate | Con-sumer basket | Taxes | Degree of free-dom | Right to infor-mation |
| Germany | 0,35 | 0,57 | 0,42 | 0,61 | 0,46 | 1,00 | 0,28 | 0,21 | 0,22 |
| Ukraine | 0,9 | 0,83 | 0,93 | 0,95 | 0,88 | 0,46 | 0,91 | 0,85 | 0,88 |

*Source*: compiled by the authors

The diagrams constructed from Table 2 (Figures 1 and 2) illustrate the distribution of the attractiveness criteria values for e-commerce in Ukraine and Germany.

**Figure 1. Attractiveness of E-commerce in Ukraine According to the Criteria in Table 1**

*Source*: compiled by the authors

**Figure 1. Attractiveness of E-commerce in Germany According to the Criteria in Table 1**

*Source*: compiled by the authors

Step Three: assign weights to the criteria (degree of significance, which may vary for different individuals). In our list, the “weights” correspond to the ranks in the expert-created list of criteria, ordered by decreasing significance from 9 (highest weight) to 1 (lowest weight). The experts we consulted assigned the following weights to the criteria (Table 3).

Table 3

**Unnormalized Weights of Criteria**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Criteria (*fі*) | І expert | ІІ expert | ІІІ expert |
| 1 | Infrastructure | 7 | 6 | 9 |
| 2 | Medical services | 8 | 7 | 8 |
| 3 | Own housing | 9 | 1 | 3 |
| 4 | Small business | 4 | 9 | 5 |
| 5 | Climate | 5 | 5 | 7 |
| 6 | Consumer basket | 3 | 3 | 2 |
| 7 | Taxes | 6 | 2 | 1 |
| 8 | Degree of freedom | 2 | 8 | 4 |
| 9 | Right to information | 1 | 4 | 6 |

*Source*: compiled by the authors

In working with different expert samples, we observed that experts from the second group (Ukrainian refugees who returned home) were most concerned with: business, degree of freedom, and right to information. Experts from the third group (refugees who continue to reside in Germany) considered the most important factors for e-commerce to be: infrastructure, climate, and medical services (they did not deal with German taxes as they paid them in Ukraine). Experts from the first group (Germans of Ukrainian origin) preferred: own housing, taxes, and business, and they were either accustomed to or unaware of how issues like restrictive regulations, inconvenient infrastructure, and lack of information about problems were addressed in Ukraine.

Step Four: calculate the group “weights” of the criteria using the formula  і and obtain 9 average expert unnormalized weight coefficients for the criteria (Table 4, row 3).

Normalization of the criteria weight coefficients is performed using the formula:

 (7)

In our case *n* = 9, 

After calculations, we obtain the normalized weight coefficients for the criteria (Table 4, row 4).

**Table 4**

**Average Expert Unnormalized and Normalized Weight Coefficients of the Criteria**

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |
| No. | Criteria (*fі*) | Group Weights of Criteria () | Normalized Weight Coefficients of Criteria () |
| 1 | Infrastructure | 7 | 0,437 |
| 2 | Medical services | 7,(6) | 0,479 |
| 3 | Own housing | 5,(3) | 0,333 |
| 4 | Small business | 6 | 0,375 |
| 5 | Climate | 5,(6) | 0,354 |
| 6 | Consumer basket | 2,(6) | 0,166 |
| 7 | Taxes | 3 | 0,187 |
| 8 | Degree of freedom | 4,(6) | 0,291 |
| 9 | Right to information | 5,(3) | 0,333 |

*Source*: compiled by the authors

**Step Five:** Construct the integral quality criterion based on the weighted aggregation method of criteria. It is expressed as:

,

where *n* – is the number of criteria (in our case *n* = 9),

*αi* – are the weights of the criteria (Table 3),

 – are the normalized expert coefficients (Table 4).

Then for Germany (rounded to the nearest thousandth):

*F*1 = 0,35\*0,437 + 0,57\*0,479 + 0,42\*0,333 + 0,61\*0,375 + 0,46\*0,354 + 1\*0,166 + 0,28\*0,187 + 0,21\*0,291 + 0,22\*0,333 = 1,308.

And for Ukraine (rounded to the nearest thousandth):

*F*2 = 0,9\*0,437 + 0,83\*0,479 + 0,93\*0,333 + 0,95\*0,375 + 0,88\*0,354 + 0,46\*0,166 + 0,91\*0,187 + 0,85\*0,291 + 0,88\*0,333 = 2,585.

**Discussion**

Thus, we obtained a higher attractiveness coefficient for e-commerce in Ukraine compared to Germany. Similarly, a higher attractiveness rating for our country in general, according to other indicators and with other experts, was obtained in [19, с. 89-92].

This diverges from commonly accepted views. According to Statista, in 2022-2023, Ukraine did not rank in the Top 10 countries with the highest percentage of retail e-commerce sales [1]. Additionally, according to the ranking of the wealthiest countries (which also considers e-commerce prospects), Ukraine was ranked 92nd in 2023 (with Germany at 16th place) [17].

Our study demonstrates that this does not align with reality. The results of our calculations indicate that such rankings might be based on criteria that do not account for the full picture of life in a country and business conditions.

**Conclusions**

The study provides a deeper understanding of the attractiveness of various countries for e-commerce. The analysis of the criteria system revealed that Ukraine’s ranking in global e-commerce lists is underestimated due to incomplete consideration of all aspects of its convenience. The research demonstrates that implementing e-commerce in Ukraine is more advantageous due to both direct factors (greater freedom, lower taxes, , faster delivery, better mobile connectivity) and indirect factors noted by the authors.

For further exploration of this topic, it is recommended to extend the comparative analysis to other Western European countries using the proposed criteria system. This would allow for a broader understanding of the e-commerce landscape across different nations and enable the identification of best practices and trends that could be applied in various regions. By assessing countries such as France, the Netherlands, Italy, and Spain with the same set of criteria, researchers can gain valuable insights into the factors that drive e-commerce success in these economies. This comparative approach will provide a more comprehensive perspective on the attractiveness of e-commerce environments in Europe and contribute to developing tailored strategies for different markets..

For greater objectivity, it is crucial that researchers spend some time living in these countries (i.e., be integrated into their environment). This will provide a better understanding of how well a particular country meets the actual needs and expectations of people regarding living conditions and business operations, including e-commerce. Alternatively, it may still be preferable to remain in Ukraine, where it is easier and quicker to establish and develop an e-commerce business, and where conditions for employees are better.

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**ПОРІВНЯННЯ ПРИВАБЛИВОСТІ ЕЛЕКТРОННОЇ КОМЕРЦІЇ УКРАЇНИ ТА НІМЕЧЧИНИ**

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