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Original Article

GEOGRAPHICAL EXPANSION AND ITS IMPACT ON E-COMMERCE COMPANY REVENUE: A REGIONAL ANALYSIS

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Abstract: *This paper examines the relationship between geographical expansion and e-commerce company revenues, using data from Deloitte's Global Power of Retailing report for the period from 2010 to 2023. The aim of the study is to determine whether the number of countries in which a company operates influences its revenue and whether this effect varies across regions. The analysis employs a linear regression model, with the logarithm of revenue as the dependent variable and the number of countries in which a company operates as the independent variable.*

The results show that geographical expansion has a negative effect on revenues when observing the entire sample of companies, which may be explained by expansion costs and the complexity of managing operations across multiple markets. However, the regional analysis reveals significant differences. In the United States and Asia, the effect was not significant, while in Europe, a positive and statistically significant effect was observed. This result can be explained by the fragmented nature of the European market, where individual countries tend to have smaller markets compared to other regions. These findings emphasize the importance of adapting geographical expansion strategies to the specific characteristics of individual regions to optimize e-commerce company revenue growth.

Key words: *geographical expansion, e-commerce, revenue analysis, regional differences*

JEL classification*: F32, L81*

1. INTRODUCTION

Over the past few decades, e-commerce has become an important segment of the global economy, transforming the way consumers and businesses exchange goods and services. In the United States alone, more than 215 million consumers engaged in e-commerce in 2022, spending approximately 1.3 trillion dollars. During the same year, businesses exchanged goods worth over 8.5 trillion dollars through electronic commerce (Laudon & Traver, 2023). According to estimates, e-commerce is expected to account for 41% of global retail sales by 2027 (Boston Consulting Group, 2023), indicating its dynamic growth.

As e-commerce continues to globalize, companies are increasingly expanding their operations beyond their home countries. However, although internationalization is often associated with entering foreign markets, it represents a broader concept that also includes the adaptation of products, strategies, and operational models to local conditions. Geographic expansion, which is the specific focus of this paper, refers to the increase in the number of countries in which a company operates. While such expansion can contribute to growth, it also presents challenges related to costs, more complex management, and institutional differences across regions.

Previous research (Swoboda & Sinning, 2022) indicates that e-commerce companies tend to internationalize more rapidly, but unevenly. Success in international markets depends both on the presence across multiple markets and the ability to strategically adapt to local conditions. Additionally, data show that markets differ significantly. In Europe, e-commerce is strongly represented through local platforms, while the U.S. and Asian markets lead in terms of consumer spending and technological innovation (Sales Layer, 2023).

Examining how geographic expansion affects company revenues, while accounting for regional differences, represents an important step in analyzing growth strategies in the e-commerce sector.

2. METHODLOGY

The subject of this research is the impact of geographic expansion—measured by the number of countries in which an e-commerce company operates—on the company's revenue. The aim of the study is to examine the existence of a statistically significant relationship between the scope of market presence and business performance, as well as to determine whether this effect depends on the region in which the company operates (Europe, the United States, and Asia).

Based on these objectives, the following hypotheses are formulated:

H1 (main hypothesis): The number of countries in which an e-commerce company operates has a significant impact on its revenue.

H1a (alternative hypothesis – regional differences): The effect of the number of countries on revenue depends on the region in which the company operates.

The data used in this study were obtained from Deloitte's Global Powers of Retailing reports for the period from 2010 to 2023. The analysis includes all companies classified in these reports as "non-store," based on the assumption that online sales dominate their business model. However, certain companies, such as Dell Inc. and Arcandor AG, may have more complex business structures, which introduces a potential methodological limitation to the sample.

The empirical analysis was conducted using linear regression with robust standard errors (vce(robust)) to account for heteroskedasticity. The dependent variable is the natural logarithm of total company revenue (ln_revenue), while the main independent variable is the number of countries in which the company operates. The term "geographic expansion" is used throughout the paper, as the analysis focuses on the number of countries in which a company operates. The term "internationalization" is deliberately avoided, as it refers to a broader and more complex concept involving various aspects of international business, whereas the available data allow for the analysis of geographic presence only.

The basic form of the regression model is as follows:

$$\ln(\text{revenue}_i) = \beta_0 + \beta_1 * \text{countries}_i + \varepsilon_i \quad (1)$$

where $\ln(\text{revenue}_i)$ represents the natural logarithm of the revenue of company i, and countries_i denotes the number of countries in which the company operates. This model was first applied to the entire sample in order to examine the general relationship between geographic expansion and company revenue.

Subsequently, an extended model with interaction terms was implemented. The goal of this model was to determine whether the effect of geographic expansion differs significantly for European companies. The model includes a dummy variable for Europe (Europe), as well as an interaction term between European companies and the number of countries in which they operate:

$$\ln(\text{revenue}_i) = \beta_0 + \beta_1 * \text{counties}_i + \beta_2 * \text{Europe}_i + \beta_3 * (\text{Europe}_i \times \text{counties}_i) + \varepsilon_i \quad (2)$$

Using this model enabled the estimation of the specific effect of the number of countries on revenues for European companies, as well as testing the statistical significance of the difference compared to other regions.

In addition, separate regressions were conducted for three regions—Europe (Germany and the United Kingdom), the United States, and Asia (China and South Korea)—in order to further explore differences in the effects across markets. For the purpose of regional analysis, the sample was divided into three groups: the United States (48 companies), Europe (23 companies), and Asia (21 companies).

Following each regression, a multicollinearity test was performed using the VIF (Variance Inflation Factor) command, and none of the values indicated the presence of significant collinearity between the variables.

3. RESULTS ANALYSIS

This section presents and interprets the results of the regression analysis conducted on a sample of "non-store" retail companies for the period from 2008 to 2021.

Table 1. Regression results for all companies

Variable	Coefficient
countries	-0.0025574**
	(0.0013348)
constant	9.656804***
	(0.1224036)
Observations	92
R2 (overall)	0.0111
F-statistic	3.67
p-value (F-test)	0.0586
Root MSE	0.98063
VIF (countries)	1.00
Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1	

Source: Author's calculations based on data from Deloitte Global Powers of Retailing Reports (2010–2023).

The results presented in Table 1 refer to the full sample of observed companies and indicate that the number of countries in which a company operates has a statistically significant, but negative, effect on revenue. The coefficient for the variable countries is -0.0026 and is statistically significant at the 5% level, suggesting that, on average, each additional country in which a company operates is associated with a decrease in revenue of approximately 0.26%. Although this finding is somewhat contrary to the common expectation that broader international presence leads to higher revenues, its effect is relatively weak.

The total explained variance of the model (R^2) amounts to only 1.1%, indicating that the number of countries in which a company operates accounts for only a small portion of the variability in revenue. Additionally, the p-value of the F-test is 0.0586, suggesting that the model is marginally significant at the conventional 10% level. Robust standard errors were used in the model to correct for potential heteroskedasticity, and further diagnostic tests did not indicate issues with the variance of residuals or multicollinearity.

Overall, although the examined independent variable shows a statistically significant effect, the model's limited explanatory power suggests that the number of countries in which a company operates is not sufficient on its own to explain the factors influencing the revenue of non-store retail companies. These findings encourage further regional-level analysis to explore whether the relationship between geographic presence and revenue varies depending on regional characteristics, including potential influences of market and institutional factors.

Table 2. Regression Results by Region (US, Europe, Asia)

Variable	Coefficient		
	US	Europe	Asia
countries	-0.00204	0.01692***	-0.00776*
	(0.00146)	(0.00410)	(0.00438)
constant	9.7356***	8.71544***	9.90069***
	(0.18583)	(0.15125)	(0.25190)
Observations	48	23	21
R2 (overall)	0.0086	0.4355	0.0488
F-statistic	1.96	17.03	3.13
p-value (F-test)	0.1683	0.0005	0.0927
Root MSE	1.1396	0.29953	0.98759
VIF (countries)	1.00	1.00	1.00
Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1			

Source: Author's calculations based on data from Deloitte Global Powers of Retailing Reports (2010–2023).

The results presented in Table 2 provide insights into the effects of geographic presence on company revenues within the "non-store" business model when the analysis is conducted separately by region: the United States, Europe, and Asia. A significant contrast is observed between regions in terms of the magnitude and direction of the effect, as well as the statistical significance of the estimated coefficients.

For European companies, a positive and statistically significant relationship between the number of countries of operation and revenue was identified. The coefficient is 0.0169, indicating that an increase in presence by one additional country is associated, on average, with a 1.69% increase in revenue. This finding is consistent with the assumption that international expansion, in the context of European companies, contributes to revenue growth. One possible explanation lies in the fragmented nature of the European market, which allows companies to reap greater benefits from expansion. The high R^2 value of 0.44 further confirms that the model explains revenue variation relatively well within this region.

In contrast, for the sample of companies from the United States, the number of countries in which a company operates does not have a statistically

significant effect on revenue, and the coefficient is small and negative (-0.0020). Although the negative sign deviates from expectations, the result is not statistically significant, suggesting that the revenues of companies in this region are not strongly influenced by geographic expansion. It is possible that U.S. companies generate the majority of their revenue from their domestic market, and that additional operations abroad do not yield proportional gains. This finding can also be interpreted through the lens of the revised Uppsala model of international business. According to this model, successful internationalization depends on gradual integration into relevant business networks. Firms lacking insider positions in foreign markets face the so-called liability of outsidership, which significantly hinders access to resources, trust, and local knowledge (Johanson & Vahlne, 2009, pp. 1415–1416).

A similar logic can be applied to the results obtained for Asian companies. In the sample of companies from Asia, a negative coefficient (-0.0078) was also observed, which is statistically significant at the 10% level. This result suggests a possible negative impact of expansion on revenue, which may reflect regional specificities, regulatory challenges, or a strategic focus on domestic markets, all of which may limit the benefits of international presence. However, the explained variance of the model is low ($R^2 = 0.0488$), meaning that the model's overall contribution to explaining revenue variation is limited.

In a regional comparison, Europe is the only region where there is compelling evidence that geographic expansion is positively correlated with revenue among non-store retail companies. These findings indicate that the impact of geographic expansion is not universal and depends on the institutional and market characteristics of each region.

Table 3. Regression model with regional dummy (Europe) and interaction term

Variable	Coefficient
countries	-0.0028267**
	(0.0013609)
Europe	-1.066711***
	(0.2088263)
Europe_countries	0.0197502***
	(0.0042318)
constant	9.782152***
	(0.1475472)
Observations	92
R2 (overall)	0.0781
F-statistic	9.23
p-value (F-test)	0.0000
Root MSE	0.95754
VIF (countries)	3.12

Note: Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculations based on data from Deloitte Global Powers of Retailing Reports (2010–2023).

Table 3 presents the results of an OLS regression model that includes a regional dummy variable for Europe, as well as an interaction effect between Europe and the number of countries in which the company operates (Europe_countries). In this way, the model explicitly tests whether the effect of geographic presence on revenue differs in the European context compared to other regions.

The results show that the main effect of the number of countries is negative and statistically significant at the 5% level (coefficient = -0.0028), confirming earlier findings that operating in a larger number of countries is not associated with revenue growth when considering the full sample of companies. However, the dummy variable for Europe has a strong and negative effect (-1.0667), indicating that, in the absence of international presence, European companies tend to have significantly lower revenues on average compared to companies from other regions.

The most important result of this model refers to the interaction term Europe_countries, which has a coefficient of 0.0198 and is highly statistically significant ($p < 0.01$). This finding suggests that in the European context, a larger number of operating countries has a positive and much stronger relationship with revenue than in the rest of the world. Specifically, each additional country is associated with an increase in revenue of nearly 2% for European companies, which aligns with the results from the regionally segmented model. The increase in explained variance to 7.8% ($R^2 = 0.0781$), compared to the model in Table 1, further confirms that incorporating regional differences and interactions with geographic presence contributes to better explanation of revenue variation. The VIF value (3.12) for the main independent variable indicates moderate collinearity, but does not suggest serious issues with model specification.

Overall, the results from Table 3 confirm that the effect of international presence is significantly shaped by the regional context, with Europe

standing out as the region where geographic expansion demonstrates a clearly positive contribution to revenues of non-store retail companies.

Based on the conducted regression analysis, it can be concluded that the main hypothesis is partially confirmed. While the total number of countries in which a company operates does not show a consistent positive effect on revenue across the entire sample, the detailed regional analysis demonstrates that such an effect exists in the European context, reinforcing the importance of regional specificities when assessing the impact of geographic expansion.

4. DISCUSSION

The results of this research indicate that the impact of geographic expansion on the revenues of e-commerce companies is not universal, but largely depends on the regional context. In the model encompassing the full sample (Table 1), the coefficient for the number of countries in which a company operates is negative and statistically significant, but very weak in magnitude. This finding contradicts the common expectation that broader international presence leads to proportional revenue growth, highlighting the need for a deeper understanding of the factors that determine expansion success. One of the key reasons for such results may be the barriers to entering new markets. As noted by Tovstolyak (2020, p. 11), e-commerce companies expanding into international markets face numerous obstacles, including regulatory differences, delivery inconsistencies, payment methods, and variations in consumer trust. These barriers are particularly pronounced in the digital environment, where expansion often requires adaptation of logistics processes, language, and user experience. A similar conclusion is presented by the same author in the conclusion of the study, emphasizing that mere presence in foreign markets is not sufficient for success. Rather, companies must tailor their offerings and strategies to meet local needs and expectations (Tovstolyak, 2020, p. 36).

These findings are also consistent with theoretical frameworks. Swoboda and Sinning (2022) point out that e-commerce companies often enter new markets faster and less uniformly than traditional firms, but that rapid expansion without a clear strategy can reduce potential positive effects. Similar conclusions are drawn by Sinkovics, Sinkovics, and Jean (2013, p. 131), who warn of the so-called "virtual trap" phenomenon. Companies relying solely on the internet when entering foreign markets often fail to develop a deep understanding of local conditions and do not establish strong relationships with customers and partners. As a result, despite digital presence, the effects of expansion on revenue may fail to materialize. This further confirms that internationalization through e-commerce must be strategically guided and locally adapted in order to produce the expected benefits. Budhwar (2023) also emphasizes that cross-border e-commerce involves regulatory and logistical challenges that may limit the gains from expansion. In the regional analysis (Table 2), it was found that only in Europe does the number of countries in which a company operates have a positive and statistically significant effect on revenue. This specificity can be interpreted in line with Dunning's eclectic paradigm (OLI), which suggests that companies expand where there is a combination of ownership advantages, location-specific factors, and benefits from internalization. The fragmented nature of the European market encourages companies to enter a larger number of countries in order to compensate for the limited size of individual markets and to achieve growth (Dunning, 1988, p. 5).

In the United States, where companies already operate in a large and homogeneous domestic market, further international expansion often does not lead to significant revenue gains. U.S.-based companies, for example, generate the majority of their revenue in the domestic market, owing to high purchasing power and the dominance of large platforms such as Amazon and Walmart (Sales Layer, 2023). Therefore, expansion into other countries does not necessarily result in increased revenue. This finding can also be explained through the concept of institutional distance, which highlights how differences in laws, business culture, and regulatory frameworks can hinder operations in new markets (Kostova & Zaheer, 1999, p. 72). According to the same authors (1999, p. 74), companies from stable and developed markets, such as the U.S., often do not feel the need to significantly adapt to foreign environments, which may reduce the effectiveness of internationalization if companies fail to adopt approaches that account for local differences. In Asia, the negative and marginally significant effect may also result from institutional distance (Kostova & Zaheer, 1999) and business practices specific to the region, such as closed digital ecosystems, unique regulatory structures, and high consumer sensitivity to local brands. The results from Table 3 further confirm that the positive effect of geographic expansion is primarily evident in the case of European companies, where the interaction between the number of countries and regional affiliation demonstrates a statistically strong and positive contribution to revenue. This reinforces the importance of considering regional factors when designing expansion strategies in e-commerce. In sum, it can be concluded that

geographic expansion alone is not a guarantee of success. Its effect depends on a company's ability to adapt to local conditions, recognize institutional barriers, and tailor its strategy to the specific characteristics of each region.

CONCLUSION

The aim of this study was to examine whether the geographic expansion of e-commerce companies, expressed through the number of countries in which they operate, affects their revenue, and whether this effect depends on the specific characteristics of different regions. The results show that, at the level of the full sample, a greater number of countries in which a company operates has a weak but negative effect on revenue. This finding suggests that expansion alone is not a sufficient condition for growth and that strategic adaptation to local markets is essential. However, the regional analysis provides deeper insight into the variations in the effects of geographic expansion. In Europe, a positive and statistically significant effect of geographic presence on revenue was identified, which may result from market fragmentation and the greater benefits of expanding across several smaller markets. In contrast, such an effect was not confirmed in the United States or Asia, highlighting the importance of institutional and market differences. It is particularly important to note that companies from the U.S. already generate high revenues from their domestic market, while in Asia, barriers such as regulatory constraints and closed digital ecosystems may limit the effects of internationalization. These findings confirm that the impact of geographic expansion is not universal, but rather depends on the local context and a company's ability to adapt to the specific characteristics of each market. In this regard, internationalization strategies in e-commerce must be carefully designed and tailored to the conditions of each region. Future research could further include qualitative factors such as organizational flexibility, supply chain structure, and the presence of local partners in order to better understand all dimensions of successful expansion in the digital sphere. The study offers practical implications for e-commerce firms seeking to expand internationally and underscores the importance of region-specific strategies.

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