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High-growth companies in a digital transformation environment. An analysis of competitiveness factors for the eurozone

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Abstract

The global economy is undergoing a process of digital transformation that impacts both competitiveness and the structure of the business environment. This process also presents opportunities for the development of companies, increasing numbers of which have become high-growth companies, which in turn has effects on the very structure of business.

High-growth companies are becoming increasingly prevalent in the business structure of the eurozone, both in terms of their numbers and in terms of employment generation. This, along with the growing importance of sectors related to artificial intelligence, makes it imperative that research attention is paid to the factors that enhance the development of this group of companies.

This paper aims to analyse the competitiveness-related factors that influence the prevalence of high-growth companies in the computer programming, consultancy and related activities sector (NACE category J62) in the eurozone's business structure. To this end, different models have been developed, based on panel data from 2013 to 2017, comprising macroeconomic variables and competitiveness factors provided by the World Bank, in order to explain the proportion of high-growth firms in eurozone economies. The results show that the key factors explaining the prevalence of high-growth firms in any particular country are economic growth, credit growth, labour market efficiency, market size and business sophistication.

Keywords: *High growth companies, macroeconomic conditions, competitiveness factors, eurozone*

JEL Classification: M10, M21

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1 INTRODUCTION

Today, it is impossible to analyse the economic and business situation without considering the influence of the large amount of data being continuously generated and its management through artificial intelligence techniques (Cano-Marin, 2024; Knobel, Costa-Climent & Haftor, 2024). In fact, the digital transformation of economies in general and of companies, in particular, is the basic characteristic of the so-called Revolution 4.0 (Buck et al., 2023; Li et al., 2023; Tagscherer & Carbon, 2023; Pereira, & Pereira, 2024; Khodor, Yela & Ramadani, 2024; Saleem et al., 2024; Uddin, 2024; Yoshikuni et al., 2024; Luo et al., 2024; Wang et al., 2024; Lo & Chien, 2024; Plaza-Casado, Blanco-González & Rivero-Gutiérrez, 2024). This is based

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on the interconnections of digital devices, the massive generation of data provided by these interconnections, and data processing using artificial intelligence algorithms.

Digital transformation processes are affecting all economic sectors, since none eludes the application of this new digital culture. With the digital transformation of the economy comes the growth of certain fundamentally important sectors, including computer programming, consultancy and related activities.

Digital activities (for example, activities and services in cloud computing, software solutions or Artificial Intelligence algorithms and especially in data management services), have experienced strong growth over the last few years at the European level, as shown by the employment data generated. Eurostat data show that employment in the eurozone in this sector increased by 54% between 2008 and 2019, while all other sectors combined saw an increase of 3% for the same period. Some countries, such as Portugal, Estonia, and Lithuania, stand out, with a growth of over 200% in job creation, whereas countries such as the Netherlands, Germany, Latvia, Italy, and Spain experienced below-average growth.

This growth in employment in the sector has been accompanied, and probably explained, by a strong increase in the number of companies working in this type of activity. Only during the economic recovery period between 2014 and 2017 did the number of companies within this sector in the eurozone grow by 13%, compared with the 4% growth experienced in all sectors.

Besides, business birth rates also show the significance that this sector has gained in the economic structure of the eurozone. Therefore, based on data provided by Eurostat, for the same period from 2014 to 2017, the growth rate of consulting, programming services, and data management companies has been 8% compared to an average of 1%, although it should also be noted that the business mortality rate is higher, due to the characteristic complexity of these activities. Thus, while the growth rate of failed companies in the eurozone has decreased by 2% for the period considered, the equivalent rate for the sector has increased by 3%.

Within the business structure of this sector, high-growth companies stand out. These companies had at least ten workers when they started growing, and their numbers of employees grew over a three-year period by an annualised average of at least 10%. This type of company has experienced a strong growth of 36% in the euro area between 2012 and 2017, generating at the same time, 23% more jobs in those years.

However, the eurozone's digital activities sectors experienced growth of approximately 47% between 2012 and 2017, which implies growth of close to 51% in the number of jobs generated by this type of company. Within the eurozone, the case of Spain stands out for the strong growth of this type of company in the sector studied, with a growth of 131% in the period 2012 to 2018, being also the fourth country with the most high-growth companies in the sector, after Germany, France, and Italy, which have experienced growth in those periods of 48%, 23%, and 99% respectively. Likewise, these countries lead the number of jobs generated by high-growth companies in the digital activities sector, although in the case of Spain the employment generated between 2012 and 2018 increased by 159%, compared to 62 % from Germany and 81% from Italy, a country surpassed by Spain in this regard. France stands out as an exception to this behaviour, showing a 2% reduction in the evolution of employment generated.

Focusing the study on the eurozone and the digital activities sector, this paper considers, in line with the various contributions in the literature, that the factors related to the competitiveness of countries favour the development of high-growth companies.

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In this sense, a country's competitiveness is conditioned by various economic and institutional factors, which are analysed in this paper. Thus, the paper asks whether factors such as institutions, infrastructures, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication, and innovation are related to the development of high-growth companies involved in digital economy activities.

The paper is structured as follows. First, a review of the theoretical framework of high-growth firms is presented, and then the information and methodology used in the analysis are explained. Thirdly, the variables used and their main characteristics are described. Then, the results are shown, and finally, the main conclusions are drawn and a discussion is presented.

2 THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Gibrat (1931), considered a pioneer in the study of business growth, pointed out that, from a theoretical perspective, business growth is a stochastic process conditioned by various random factors. Likewise, the so-called Gibrat's Law concludes that business growth is independent of the size of the company. This perspective, which is part of a quantitative perspective of business growth analysis, has led other authors to contrast Gibrat's Law but also to approach the problem from other quantitative perspectives, as is the case of Sallenave (1984), whose approach to business growth analysis is based on the volume of demand.

On the other hand, Albach (1967) disagrees that business growth depends on random factors, pointing out that business growth depends on the intention and determination of entrepreneurs and managers, not on random factors.

Other authors have also developed contributions to the theory of growth from different areas of management, with special attention to the field of business strategy. Penrose (1959) focuses on the theory of business growth based on business resources, so that the growth of companies is based on the existence of resources that must be used to generate value. Along this line, consistent with the contribution of Albach (1967) and focusing attention on the role of managerial decisions in business growth, the contributions of other authors such as Baumol (1959), Chandler (1962), and Marris (1964) also stand out.

From an applied point of view, (Birch, 1979) was a pioneer in researching the dynamics of employment growth by entrepreneurial firms, focusing his attention on a small number of companies capable of creating a disproportionately large number of jobs. These findings led him to introduce the term "gazelles" to describe high-growth companies.

However, beyond the theoretical contributions to business growth, the growing importance of the high-growth business segment has also influenced academia. In fact, over the last few years, the literature on these companies has multiplied. However, there is no consensus around a strict definition of high-growth companies. Moreno & Casillas (2000) point out that two basic characteristics are typical of this type of company: achieving high growth and doing so quickly. El Hakioui & Louitri (2017) argue that companies with a natural and logical growth should not be termed "gazelles", pointing out that "gazelles" would refer to young companies with less than five years of age. However, despite there being a certain consensus on the main factors that characterise these companies, the divergence in technical definitions leads to the weight of innovative high-growth companies in Europe being between 0.1% and 10% according to the definition adopted (Vértesy, Del Sorbo & Damioli, 2017).

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There is no doubt, as Krasniqi (2012) says, that both researchers and those responsible for economic policies are interested in understanding the growth factors of small companies. This field is still fairly new, so the literature is not yet sufficiently abundant (Wiklund, Patzelt & Shepherd, 2009). Audretsch (2012), in his thorough review of the existing literature on the subject, agrees with this conclusion, pointing out that we know little about high-growth companies and even less about high-growth entrepreneurship (start-ups). What stands out from Audretsch's study is that start-ups not only figure strongly among high-growth companies but also contribute to a high percentage of their job creation. Monteiro (2019) also contributes to the literature by outlining the main characteristics of high-growth companies.

The literature has focused on efforts to understand the factors that characterise high-growth companies and how they differ from other companies. Some authors emphasise the internal characteristics of the company and its managers. For example, Chanut-Guieu & Guieu (2014) conclude that high growth results from the psychological condition of the company leader (described as being an optimistic visionary with a stable profile but with a marked taste for adventure and manageable risk). They also point out, however, that high-growth companies feel secure with the geographical base where they operate and can feel discomfort when physical expansion into less-known regions is necessary. Rees-Jones, Brown & Jone-Evans (2024) point out that periods of high growth are intrinsically and inextricably interrelated with the entrepreneurial traits and capabilities of their founders and their ability to seize crucial growth opportunities.

On the other hand, Julien (2000) shows that the ability to manage change and reorganise management is essential for the success of high-growth companies, indicating the importance of the organisational structure, the characteristics of the managers, the orientation to markets and exports and the use of environmental resources, such as the relationship with training or innovation institutions (as universities and research centres). Coad & Srhoj (2020) conclude that firms with lower inventory levels, high short-term debt, and high prior employment growth are more likely to become high-growth firms. Bannò & Varum (2021) conclude that, in a crisis environment, high-growth companies are characterised by high indebtedness and productivity. Finally, Darwish (2022) concludes that factors such as innovation and know-how, family growth, exploration and exploitation opportunities, human capital, strategic focus, business and social networks, external support, and flexibility and adaptability make it possible to achieve and maintain a high degree of high growth.

Moreno & Casillas (2007) showed that between high-growth companies and those with moderate or falling growth, there are differences in size, the availability of inactive resources, and the availability of financial resources. Similarly, Simbaña-Taipe, Ushiña & Salas (2019) conclude that leverage, profitability, innovation, liquidity, solvency, and size have a positive impact on the growth rate of high-growth firms.

Finally, Chae (2024) notes that revenue growth, efficiency management, and investment in assets and human resources are important in increasing the chances of becoming a high-growth firm, showing the importance of endogenous factors.

Likewise, other authors highlight the importance of the environment in business growth, which is the approach followed by this work. For example, Monteiro (2019) argues that the new institutional economics (based on North (1990) and other authors) can be a suitable theoretical framework in which to explore how the institutional environment influences the creation and performance of high-growth firms. Krasniqi & Desai (2016) analyse the influence of formal and informal institutions on high-growth companies for economies in transition, showing that the interaction between formal and informal institutions positively influences high-growth

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companies and finding differing effects according to whether they are economies with faster or slower transition processes. Therefore, the institutional environment becomes a factor to be analysed in the development of European high-growth companies that develop digital activities.

Teruel & de Wit's (2011) empirical study, covering seventeen OECD countries and analysing entrepreneurship-related factors—such as higher education, institutional obstacles, and growth opportunities—concluded that the key variables were economic growth and technological development. Krasniqi (2012) studied the impact on small, high-growth companies in transition economies of human and entrepreneurial capital, strategic and entrepreneurial orientation, and the company's internal factors and environment (especially the institutional framework). Amat, Antón & García (2013) concluded after studying a sample of high-growth industrial companies in Catalonia that policies aimed at innovation and quality, internationalisation and financial strategy influence the high growth of these companies and their sustainability over time. These contributions to the literature allow us to deduce the importance of competitiveness factors such as education levels, the institutional environment and the institutional rigidities of the various markets (such as goods and labour), technological factors, and the innovation and sophistication of firms.

The international component appears to be an important factor, as pointed out by various authors, including Cruz, Baghdadi & Arouri (2022), who note the importance of the international activity of high-growth firms, concluding that firms that engage in importing or exporting activity, or are foreign-owned or benefit from offshore regimes, are more likely to become high-growth firms than other firms of similar size, age, sector and region. These results demonstrate the importance of market size (national and international) as a factor in the development of high-growth companies.

In the case of the United Kingdom, Lee (2013) finds, for a sample of SMEs, that high-growth companies experience difficulties in various areas, such as attracting talent or lacking skills. Among other difficulties, Lee highlights financing, education levels, and corporate financing as a control factor.

Mazzucato & Parris (2015) analysed the relationship between high-growth companies' investment in R&D and economic growth. They point out that for the North American pharmaceutical industry the growth of investment in R&D depends on changes in companies' competitive environment. Consequently, innovation policy must take into account the structure of the competition in which companies are engaged, and not only company characteristics. Ko, Lee and Seol (2021) conclude that the determinants of growth are R&D intensity, operating profit ratio, firm size and firm age. Therefore, innovation factors and the need to consider economic growth as a contrasting factor become indicators to be analysed in the study of high-growth companies.

Ruiz, Fuentes & Ruiz (2016) reviewed the strategic variables that explain the high growth expectations of entrepreneurs from a gender perspective. They concluded that women exhibit lower high-growth expectations than men and that the factors that affect these expectations are different for men and women.

Queirós, Braga & Correia (2018) study the influence on high-growth companies of factors such as the size of the company, the distance from power, the fact of avoiding uncertainty and the degree of masculinity. This author also stresses the importance of business growth in economic growth and innovation.

Looking at EU companies, Vértesy, Del Sorbo & Damioli (2017) point out that there are important structural differences between the countries of the European Union in relation to the

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innovation profile, size and performance of high-growth companies. This highlights the importance of studying the European reality because, despite sharing institutions, regulations and monetary policies, these countries have significant differences that lead to differentiated business structures. Flachenecker et al. (2020), after analysing the geographical and sectoral distribution of European high-growth companies, emphasised the importance of venture capital markets in financing growth. Del Olmo et al. (2023) showed that, for high-growth companies in the eurozone, the important factors included economic growth, the availability of bank credit in the economy, labour flexibility, freedom of investment and the development of more creative and innovative products.

Finally, Motoyama et al. (2024) note that the standard perception of high-growth firms leads to support programmes being highly targeted at firms in the high-tech sector seeking venture capital investment and hyper-growth.

In this context, the present work seeks to study the factors that favour the development of high-growth companies in activities related to digital transformation. It is considered that the degree of competitiveness in the countries where these companies work is a fundamental factor for the growth of the business fabric.

In short, the paper's hypothesis is that the eurozone countries with the strongest competitiveness factors produce more high-growth companies. Figure 1 shows, schematically, the competitiveness factors that have been considered in this paper; they derive from the index developed by the World Bank.

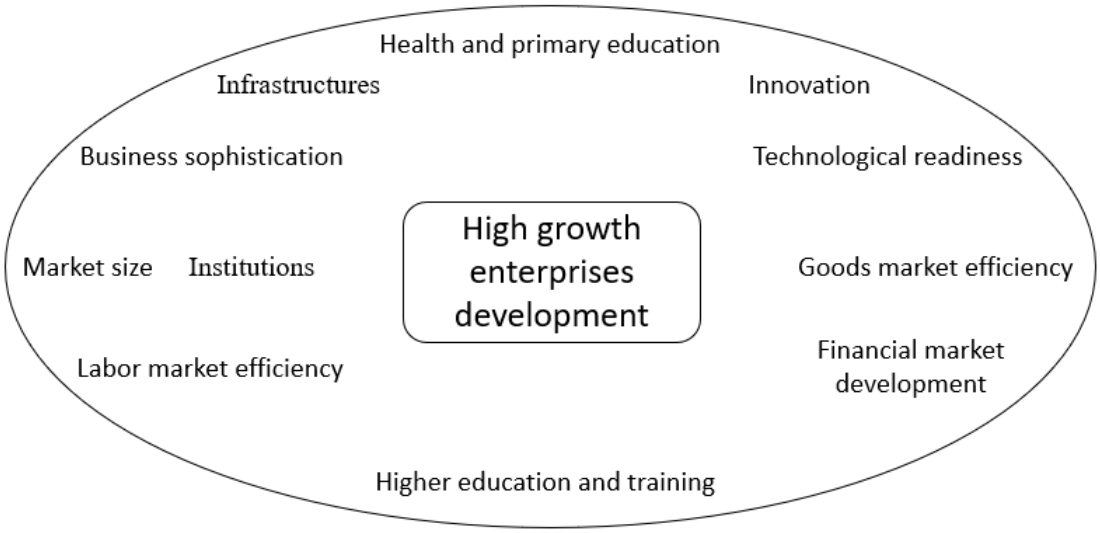

Fig. 1 - Competitive factors and the development of high-growth companies. Source: Authors' own elaboration.

Many authors have discussed the influence of these types of competitiveness factor on the development of high-growth companies. For example, Schreyer (2000) highlights the importance of an adequate institutional, administrative and legal framework to promote the growth of companies. Teruel & de Wit (2011) also consider that institutions impact business growth, while pointing out that growth is also enhanced by higher education, job protection, economic growth, technological development and business opportunities.

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The OECD (2010), on the other hand, argued that governments that want to promote the development of high-growth companies should focus on elements such as eliminating growth obstacles due to regulations, encouraging an entrepreneurial culture, supporting training and a culture of change in young companies, improving access to financing sources, promoting company innovation, and internationalisation.

Bosma & Stam (2012) highlight the importance, from a local point of view, of educational policies and policies related to the labour market. Henrekson (2014) agreed, arguing that a more flexible labour market facilitates the flexibility of those entrepreneurs more prone to risk, which, in turn eases their evolution towards high growth. Regulation, thus, has a greater impact on the early stages of growth of entrepreneurs who desire to grow than on other, more mature companies and those with no aspirations to grow.

On the other hand, Klingler-Vidra (2016) emphasises the financing of high-growth companies, pointing out the importance of venture capital in the absence of traditional financing.

Flachenecker et al. (2020) proposed an indicator that includes various environmental conditions that affect high-growth companies, including financing possibilities, the importance of human capital, labour market regulation, business taxes, regulation and innovation.

3 SAMPLE, METHODOLOGY AND VARIABLES

3.1 Sample and methodology

A data panel covering 2013 to 2017 comprised fourteen eurozone countries. The data was extracted from the Eurostat Business Demography statistics, specifically high growth (10% or more) and employment enterprises classified in NACE Rev. 2 thus: "This division includes the following activities of providing expertise in the field of information technologies: writing, modifying, testing and supporting software; planning and designing computer systems that integrate computer hardware, software and communication technologies; on-site management and operation of clients' computer systems and / or data processing facilities; and other professional and technical computer-related activities"[1].

In accordance with other contributions from European literature (Vértesy, Del Sorbo & Damioli, 2017; Flachenecker et al., 2020), high-growth companies are taken to be those which have at least ten employees when they start growing and, in three years, experience an average annualised growth in the number of employees of at least 10% per year. (European Commission, 2014).

The information is focused on a specific sector of the economy, and a complete time series is essential for the conclusions obtained. Ireland, Greece, Cyprus, Lithuania and Malta were excluded from the sample because complete information was not available for them on the growth rates of high-growth companies for all the years considered. However, it should be noted that 95% of the total GDP of the eurozone is being considered in the 14-country sample.

The World Bank changed the methodology for the construction of the Global Competitiveness Index in 2018, when they introduced Global Competitiveness Index 4.0. It was, therefore, decided to develop the analysis until 2017, given that a comprehensive series for more recent data is not available with the new methodology.

[1] https://inspire.ec.europa.eu/codelist/EconomicActivityNACEValue/J.62

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Given the nature of the information extracted, the use of panel data models is, therefore, appropriate since the effect of the independent variables is captured regarding both heterogeneity between individuals and changes over time, thus reducing the collinearity of explanatory variables. Heterogeneity between countries has been detected in the literature (Vértesy, Del Sorbo & Damioli, 2017), so the use of panel data is considered the appropriate methodology, proposing random effects models after analysing the results of the Hausman test.

3.2 Dependent variable

As previously stated, the objective of the work is to study the rate of high-growth companies in the euro area countries for the digital activities sector. To this end, the indicator used for each country of the development of high-growth companies within the business fabric is the relationship between the number of high-growth enterprises and the number of active enterprises with at least ten employees, as shown in the following expression:

$$HG\ rate_{i,t} = \frac{HG_{i,t}}{E_{i,t}} x100$$

$HG_{i,t}$ is the number of high-growth companies for country i in year t, and $E_{i,t}$ is the number of active companies with more than ten workers.

3.3 Independent variables

The dependent variables used in this work can be divided into two groups, depending on their nature: macroeconomic control variables and contrast variables representative of the country's competitiveness.

The control variables will allow the model to capture the heterogeneity of the economic environment characteristics of each country, and the economic policy decisions related to the development of the high-growth business sector. In this way, the study is consistent with that important part of the literature that has focused on the relationship between high-growth companies and the economic environment. In Teruel & de Wit (2011), economic growth is regarded as a development factor for high-growth companies, while in Henrekson & Johansson (2009), OECD (2010) and Flachenecker et al. (2020), the tax system and other factors are considered. Likewise, OECD (2011), Brown & Lee (2014) and Klingler-Vidra (2016) considered the importance of how these companies are financed.

Thus, the macroeconomic control variables include the main economic factors related to the development of high-growth companies, consistent with the literature consulted: year-on-year GDP (Gross Domestic Product) growth, year-on-year variation in bank credit and the effective tax rate for companies. Regarding financing, it has been decided to consider bank financing since this source of finance is crucial in the balance sheet of European companies.

The independent variables analysed represent the degree of competitiveness of the eurozone countries and, thus, are the appropriate way to test the hypothesis.

These types of explanatory factors have been considered in the literature as ways to promote high growth. Thus, the first set of independent variables is the global competitiveness index of

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the countries. Additionally, this index was broken down into its main pillars in order to facilitate a more detailed analysis of which competitiveness factors in the countries are related to the volume of high-growth companies. The importance of the institutional environment, for example, has been collected by Schreyer (2000), Teruel & de Wit (2011), and others.

The rigidities of labour regulation are one of the most studied factors in this area, with important contributions by Teruel & de Wit (2011), Bosma & Stam (2012), Henrekson (2014) and Flachenecker et al. (2020).

Many authors have also studied the relationship between high-growth companies and other competitive factors, such as the quality of education and the development of innovation and technology.

It has therefore been considered appropriate to use information from the World Bank's Global Competitiveness Index, which provides information on the various factors that make up the competitiveness of each country.

The following control variables have been used: GDP growth, banking credit growth and effective tax rates. The sources of information for these are, respectively, Eurostat, the World Bank and the European Commission.

The independent variables used, based on data from the Global Competitiveness Index (World Bank), were the Global Competitiveness Index, institutions, infrastructures, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication and innovation.

Tab. 1 - Descriptive statistics. Source: authors' own elaboration

	Minimum	Maximum	Mean	Std. deviation
High growth enterprises (%)	6.380	24.430	17.516	3.581
The growth of GDP (%)	-1.800	5.700	1.897	1.525
The banking credit growth (%)	-20.178	40.519	-1.288	9.855
Effective tax rates (%)	12.100	38.400	23.572	6.330
The Global Competitiveness Index	4.103	5.662	4.896	0.463
Institutions	3.317	6.163	4.729	0.823
Infrastructures	4.115	6.437	5.433	0.630
Health and primary education	5.326	6.896	6.380	0.274
Higher education and training	4.399	6.265	5.349	0.485
Goods market efficiency	3.928	5.536	4.794	0.392
Labor market efficiency	2.852	5.067	4.415	0.476
Financial market development	2.849	5.565	4.363	0.674
Technological readiness	3.450	6.456	5.548	0.568
Market size	3.001	6.020	4.482	0.974
Business sophistication	3.637	5.703	4.838	0.595

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Innovation	3.022	5.786	4.443	0.813

Table 1 shows the basic descriptive statistics of the variables used. These data lead to a series of interesting conclusions. Firstly, the heterogeneity of behaviour between countries in relation to the rate of high-growth companies is evident, as shown by the average value of 17.5%, compared to a minimum value of 6.3% and a maximum value of 24.4%. This heterogeneity, also manifested through the standard deviation, justifies the nature of this study.

Second, the macroeconomic control variables, effective corporate tax rate and the evolution of credit provided by the financial sector also show great heterogeneity, despite all countries being in the eurozone, with a shared institutional regime and a single currency. These data indicate an economic union that will remain incomplete until it completes banking union, develops a true fiscal union and converges on harmonised labour policies (such as common unemployment insurance).

Third, the competitiveness indicators show the lowest standard deviations in the table, which indicates the opportunities in terms of competitiveness of which the eurozone countries have been able to take advantage. However, the greatest differences are shown in market size, institutions and innovation, where the challenges are still palpable.

For the purposes of interpretation, all competitiveness magnitudes are represented by a scoring scale, in which the higher the score of a factor, the better the quality assigned to that factor.

Table 2 shows the correlations between the variables. The first point of note is the significant positive correlations between the rate of high-growth companies in the digital activities sector and the effective tax rate of companies, infrastructures, technological availability and market size.

On the other hand, the greatest positive and significant correlations are between effective corporate tax rates and market size, between institutions and efficiency in markets for goods, between innovation and quality of health, between primary education and quality of higher education and training and, predominantly, between innovation and business sophistication, which shows the strong private influence in the generation of innovation.

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Tab. 2 - Correlations matrix. Source: Own elaboration. (** p<0.01; * p<0.05).

	1. High-growth enterprises	*2. Effective tax rates*	*3. The banking credit growth*	*4. The growth of GDP*	*5. The Global Competitiveness Index*	*6. Institutions*	*7. Infrastructures*	*8. Health and primary education*	*9. Higher education and training*	*10. Goods market efficiency*	*11. Labour market efficiency*	*12. Financial market development*	*13. Technological readiness*	*14. Market size*	*15. Business sophistication*	*16. Innovation*
1. High-growth enterprises																
2. Effective tax rates	0.30*															
3. The banking credit growth	0.04	-0.04														
4. The growth of GDP	0.07	0.24*	0.08													
5. The Global Competitiveness Index	0.28*	0.34**	0.00	-0.06												
6. Institutions	0.11	0.09	-0.04	0.04	0.88**											
7. Infrastructures	0.35**	0.72**	-0.09	-0.23	0.74**	0.53**										
8. Health and primary education	0.23	0.15	0.02	-0.24*	0.67**	0.55**	0.52**									
9. Higher education and training	0.19	0.09	-0.04	-0.19	0.77**	0.71**	0.53**	0.86**								
10. Goods market efficiency	0.12	0.02	0.11	0.25*	0.80**	0.84**	0.46**	0.52**	0.58**							
11. Labour market efficiency	0.22	-0.14	0.08	0.26*	0.64**	0.71**	0.25**	0.41**	0.51**	0.81**						
12. Financial market development	0.10	-0.01	0.10	0.16	0.65**	0.74**	0.12**	0.17	0.37**	0.60**	0.62**					
13. Technological readiness	0.33**	0.39**	0.03	0.15	0.84**	0.76**	0.74**	0.64**	0.61**	0.83**	0.70**	0.42**				
14. Market size	0.35**	0.75**	-0.09	-0.40**	0.35**	-0.04**	0.67**	0.25*	0.22	-0.14	-0.30*	-0.13	0.16**			
15. Business sophistication	0.22	0.44**	0.02	-0.20	0.93**	0.70**	0.79**	0.65**	0.69**	0.68**	0.41**	0.43**	0.75**	0.54**		
16. Innovation	0.20	0.32**	-0.06	-0.12	0.97**	0.89**	0.72**	0.73**	0.78**	0.75**	0.52**	0.60**	0.83**	0.35**	0.92**	

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4 RESULTS

The control variables will be included in the rest of the models, which seek to understand which competitiveness factors are significant (Table 3).

Tab. 3 - Initial model with macroeconomic control variables. Source: Own elaboration.

	Coefficients	**Std. error**	**t-value**	**P-value**
Intercept	12.671	2.775	4.565	2.234e-05
The growth of GDP	0.649	0.206	3.148	0.002
The banking credit growth	0.060	0.028	2.117	0.037
Effective tax rates	0.156	0.108	1.437	0.155
				P- value
R^2	0.1826	Hausman test		0.0969994
Adjusted R^2	0.1454	Breusch-Pagan test		5.241e-11

Table 3 shows the result of the estimation using random effects. The results of the Breusch-Pagan test (Breusch-Pagan Lagrange multiplier) indicate the existence of heterogeneity between countries and, therefore, the need to develop a panel data model with random effects compared to a model estimated using simple ordinary least squares.

However, a trade-off arises from the need to estimate a random-effects or fixed-effects model. The results of the Hausman test allow us not to reject the null hypothesis of consistency between estimators with random effects and fixed effects, with a confidence level of 99%, confirming that the appropriate model to estimate is a random effects model.

The model was estimated by applying the White1 (HC0) method, allowing the calculation of heteroskedasticity-consistent covariance estimators.

Therefore, in relation to the variables, it can be seen that the annual growth of GDP and the evolution of credit are statistically significant and with a positive effect, so they will be the variables finally used to control the models.

In short, the economic growth rate and funding growth are important factors in the development of high-growth companies active in the digital transformation. These results are consistent with previous contributions from the literature (Teruel & de Wit, 2011; OECD, 2011; Brown & Lee, 2014; Klingler-Vidra, 2016).

The next step, based on the estimated model with macroeconomic control variables, is to estimate the models that relate the rate of high-growth companies in the digital activities sector with the macroeconomic control variables (GDP growth and bank credit evolution) and competitiveness variables.

As the objective of the paper is to contribute to the understanding of the competitiveness factors related to high-growth companies. A model was constructed based on the competitiveness variable, in order to understand the effect of each factor individually.

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Tables 4a and 4b show the results of these estimates. For those models in which a heteroscedasticity problem has been identified (models 3 and 10), the White1 (HC0) method, which allows estimating the matrix of variances and covariances in a robust way to heteroscedasticity, was applied. It should be noted that all the models have been estimated using random effects. The results thus allow us to reach several conclusions. Firstly, the global competitiveness index is statistically significant and positive, so the greater competitiveness of the eurozone countries considered is positively related to the greater development of high-growth companies in the digital activities sector.This result is significant and allows us not to reject the main hypothesis of the work. However, it is also an important result from an economic policy perspective because the most competitive countries seem to be those that develop a more appropriate framework of action for the growth of service companies related to digital transformation. This results, in the long term, in a greater competitive advantage in a world that is globalised and increasingly dependent on the digital economy.In relation to the second objective of the current research—to understand the competitiveness factors in the sample countries that can affect the high growth of the companies related to the digital activities sector—the efficiency of the labour market is a statistically significant factor. With an improvement in this area, the rate of high-growth companies increases. This result is consistent with previous contributions in the literature (e.g., Bosma & Stam, 2012; Henrekson, 2014), which consider that greater flexibility in labour regulation helps develop companies with greater growth potential. This result, therefore, allows us to extrapolate this same conclusion to service companies related to digital transformation, in which the profile of employees is usually characterised by a high level of training.Market size and business sophistication are also found to be statistically significant. Undoubtedly, the sector under consideration is particularly innovative in its processes, and thus, it requires a significant breadth of market for its types of services, that is, more demand for computing, consulting and data processing. Other factors that were, a priori, considered important, such as educational level, innovation or technological availability, have not been found to be statistically significant. These results need to be explored further in future studies, but they are considered reasonable since the sector has very specific characteristics in attracting workers with an above-average level of training. Moreover, these employees are specialised in a field which, in terms of technology, innovation and global involvement, operates beyond the general levels of the country. It is also interesting that institutional quality, which is considered important in some studies (Schreyer, 2000; Teruel & de Wit, 2011), was not statistically significant. This result, too, needs to be explored, but some of the influence of the countries' institutions is clearly reflected in the variables found to be significant, such as the regulation of the labour market and the factors related to facilitating the market expansion. Therefore, it would be wrong to conclude that high-quality institutions do not favour the growth of companies but rather that the institutions that regulate national markets without common regulation across the eurozone should be considered more specifically. Finally, it should be noted that the adjustment capacity of the model is limited, in some models being below 20%. However, this result should be considered within the nature of the models developed, in which the relationship between the rate of high-growth companies and macroeconomic competitive factors is being measured. Indeed, although the relationship is statistically significant, the analysis does not consider microeconomic factors that affect the growth of companies and for which aggregate information that could complete the models developed is not available.

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Tab. 4a - Results of models with institutional factors. Source: Own elaboration.

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
The Global Competitiveness Index		2.916* (1.624)						
Institutions			0.545 (0.919)					
Infrastructures				2.196 (1.132)				
Health and primary education					1.769 (1.643)			
Higher education and training						1.588 (1.301)		
Goods market efficiency							1.785 (1.699)	
Labor market efficiency								2.212* (1.164)
Intercept	16.45*** (0.885)	2.266 (7.948)	13.88*** (4.411)	4.448 (7.7618)	5.160 (10.52)	7.951 (7.015)	8.037 (8.050)	6.802 (5.152)
The growth of GDP	0.598*** (0.201)	0.547*** (0.200)	0.594*** (0.202)	0.635*** (0.237)	0.597*** (0.200)	0.60*** (0.0281)	0.519** (0.215)	0.532*** (0.201)
The banking credit growth	0.056** (0.028)	0.0537* (0.027)	0.058** (0.028)	0.054* (0.021)	0.052* (0.028)	0.054* (0.028)	0.053* (0.028)	0.051* (0.027)
R^2	0.1635	0.2040	0.1715	0.2072	0.1815	0.1862	0.1812	0.2070
Adjusted R^2	0.1385	0.1678	0.1338	0.1711	0.1443	0.1491	0.1439	0.1709

(Standard deviation in brackets. *** p<0.01; ** p<0.05; *p<0.1).
(In the case of tests, its P-value is shown)

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Tab. 4b - Results of models with institutional factors. Source: Own elaboration.

	Model 8	Model 9	Model 10	Model 11	Model 12
Financial market development	0.184 (0.831)				
Technological readiness		1.348 (0.917)			
Market size			1.685** (0.7933)		
Business sophistication				2.088* (1.238)	
Innovation					1.205 (0.919)
Intercept	15.66*** (3.695)	9.178* (5.029)	8.772** (4.187)	6.339 (6.058)	11.16*** (4.142)
The growth of GDP	0.592*** (0.204)	0.486** (0.214)	0.667*** (0.235)	0.601*** (0.197)	0.579*** (0.204)
The banking credit growth	0.056** (0.028)	0.051* (0.028)	0.060*** (0.210)	0.0527* (0.0278)	0.053* (0.919)
R^2	0.1624	0.1859	0.2153	0.2021	0.1595
Adjusted R^2	0.1242	0.1488	0.1796	0.1658	0.1206

(Standard deviation in brackets. *** p<0,01; ** p<0,05; *p<0,1).

(In the case of tests, its P-value is shown).

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5 DISCUSSION

The study of the factors that aid the development of high-growth firms has become an area of growing importance in the academic literature. Moreover, the importance of digitisation in today's economic development makes it imperative to deepen the joint study of both fields.

This paper is framed within the theoretical framework that characterises the study of high-growth firms, in the stream of literature that highlights the influence of the business environment on high-growth firms (Monteiro, 2019).

As our results demonstrate, policymakers have available economic policies that will aid the further development of high-growth firms engaged in digital activities, consistently with contributions from the literature, such as Teruel & de Wit, 2011; OECD, 2011; Brown & Lee, 2014; Klingler-Vidra, 2016; Del Olmo et al., 2023).

Likewise, and in line with previous contributions in the literature (Ferrando, Pal & Durante, 2019; Hyde, 2021; Del Olmo et al., 2023), the financing of these companies acquires vital importance, suggesting that policies be developed aimed at fostering credit, either through banking (of great importance in Eurozone countries) or by promoting complementary financing alternatives (such as the Capital Markets Union in the European Union).

Beyond the conditions of the economic environment, our results highlight other competitiveness factors relevant to the development of high-growth companies oriented towards digital activities. The efficiency of labour markets stands out here as an important factor. Indeed, and as other authors had already argued previously (such as Bosma & Stam, 2012; Henrekson, 2014), rigidities in labour markets (including regulations and taxes, among others) represent a brake on the development of high-growth companies in the digital field. This result suggests that policymakers should consider appropriate labour market policy measures.

Finally, market size and business sophistication have also been shown to be important for the development of high-growth companies. Authors such as Mazzucato & Parris (2015) have already pointed out the importance of the competitive environment in R&D investment (and therefore more sophisticated products), and Ko, Lee and Seol (2021) showed that R&D is a growth factor. It should be noted that companies focused on the digital economy acquire the high-growth status more intensely in environments where there is market breadth (taking into account the nature of many of these companies as consultancies) and based on highly sophisticated products (such as, among others, trends in Artificial Intelligence, Blockchain, quantum computing).

One weakness of this work is due to the shortness of the five-year data period. Later studies covering a longer time perspective would be valuable. Another weakness is the relatively narrow range of the countries considered. It will be valuable in future studies to include more countries, including those where the current work could not use data for the entire period.

The implications of this work can be extended both to the field of applied literature and to the field of economic policy. On the one hand, from the perspective of the literature, it provides greater knowledge of the competitive factors that are related to the development of high-growth companies in the activities most oriented to the digital economy.

On the other hand, and given the importance of digital activities, the conclusions are significant for economic policy measures. They invite public authorities to improve the competitiveness of their economies through policies that help to generate greater economic growth. They also suggest policies aimed at increasing the availability of credit for companies, reducing the

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rigidity of labour markets and promoting market growth and business sophistication. Such policies should focus, for example, on boosting the productivity and growth of companies, enhancing competition in less competitive sectors, and increasing the openness of the economy to external opportunities.

When more information is available, several clear lines of future research will be open, focusing on analysing this company segment.

Another future line of research would involve extending this analysis to other geographies, in order to understand how regional differences in the factors studied generate differences in the development patterns of high-growth companies in digital activities.

6 CONCLUSIONS

High-growth companies, those that have an average annualised growth in the number of employees of at least 10% per year in a period of three and at least ten employees when growth begins, are an increasingly important part of the business structure of the eurozone countries, having experienced growth between 2012 and 2017 of more than 36%, and generating an increase in employment of about 23%. However, this behaviour has been even more intense in certain sectors that have grown quickly in recent years due to the profound shifts that the economy is experiencing. The advance in technologies related to artificial intelligence and the processing of the massive amount of data generated by devices connected to the Internet is allowing a global change that has been called Revolution 4.0. This implies, in turn, the strong growth of related sectors, among which the digital activities sector stands out. Combining both perspectives for the eurozone—high-growth and the sector indicated—the data is clear: 47% growth of high-growth companies were in the digital activities sector, and they generated employment growth of 52%.

In this context, the paper analyses the competitiveness factors in relation to the importance of high-growth companies in the digital activities sector as compared with the generality of companies with more than ten workers. The factors fundamental to empowering this type of company and obtaining conclusions oriented to economic policy have been identified.

The review of previous literature found that various environmental factors such as economic growth, tax regulation, business financing, institutions, education quality, technology and labour market regulation have been identified by numerous studies as essential for the development of this segment.

Based on the data available in Eurostat and previous authors's contributions, various models were developed for the eurozone in the period between 2013 and 2017. Data was taken from all the eurozone countries except Ireland, Greece, Cyprus, Lithuania and Malta, for which complete data is unavailable for the period contemplated.

Panel data models have been considered, as they are the most appropriate for the available information structure. After the relevant econometric analyses, random effects models were the model topology adopted because in some of the specifications, an adjustment was required that allows estimation of the matrix of variances and covariances robustly with regard to heteroscedasticity.

Two types of independent variables were used in the specification of the models. First, a series of macroeconomic control variables, the economic growth rate and the credit growth rate.

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Various macroeconomic factors already suggested in the literature are included as key factors in the development of high-growth companies.

Second, a model based on the World Bank's global competitiveness index was developed, highlighting the importance of the degree of competitiveness in each country for the proportion of high-growth companies in the total number of companies with more than ten workers for the sector studied. Higher levels of competitiveness were found to be positively related to a more rapid development of high-growth companies in the digital activities sector.

This result makes it possible not to reject the main hypothesis of the paper. It is an important result from an economic policy perspective, given that the most competitive countries seem to develop a more appropriate framework for the growth of service companies related to digital transformation. In the long term, this leads to a greater competitive advantage in a globalised world, one increasingly dependent on the digital economy.

In order to uncover which competitiveness factors affect the development of the business segment studied, a model was constructed for each competitiveness factor from the global competitiveness index, but maintaining the variables in the model's macroeconomic control points.

The analysis demonstrated that the significant factors are efficiency in the labour market, market size and business sophistication.

However, the work has several limitations that must be considered. Firstly, the explanatory capacity of the econometric models specified is limited because only the effects of macroeconomic competitiveness factors are being studied: this ignores those microeconomic growth factors that depend on the situation and strategy of individual companies.

Secondly, the period used for the analysis was limited because the new version of the Global Competitiveness Index 4.0 caused a break in the data series. This prevented us from working with more recent information, including the COVID-19 pandemic period.

7 REFERENCES

Albach, H. (1967). Un modelo de comportamiento del crecimiento de la empresa, *Boletín de Estudios Económicos*, 22 (70), 121-135.

Amat, O., Renart, M. A. & García, M. J. (2013). Factors that determine the evolution of high-growth businesses, *Intangible Capital,* 9 (2), 1-13. http://hdl.handle.net/2099/14000

Audretsch, D. B. (2012). *Determinants of High-Growth Entrepreneurship*, Report prepared for the OECD/DBA International Workshop on ―High-growth firms: local policies and local determinants. Copenhagen, 28 March. Available at: https://www.oecd.org/cfe/leed/Audretsch_determinants%20of%20high-growth%20firms.pdf

Bannò, M. & Varum, C. A. (2021). Champions during crises scenarios: High growth and persistent high growth firms. *Research in Applied Economics*, 13(2), 1-22. https://doi.org/10.5296/rae.v13i2.17461

Baumol, W. J. (1959). *Business behaviour, value and growth*. Harcourt, Brace and World.

https://doi.org/10.7441/joc.2025.04.14

Birch, D. L. (1979). *The job generation process*, M.I.T. Program on Neighborhood and Regional Change.

Bosma, N. & Stam, E. (2012). *Local Policies for High-Employment Growth Enterprises*, Report prepared for the OECD/DBA International Workshop on High-growth firms: local policies and local determinants, Copenhagen, March. Available at: https://www.oecd.org/cfe/leed/Bosma-Stam_high-growth%20policies.pdf

Brown, R. & Lee, N. (2014) *Funding issues confronting high growth SMEs in the UK*. The Institute of Chartered Accountants of Scotland (ICAS), Edinburgh, United Kingdom. Available at: http://eprints.lse.ac.uk/57264/

Buck, C., Clarke, J., de Oliveira, R. T., Desouza, K. C. & Maroufkhani, P. (2023). Digital transformation in asset-intensive organisations: The light and the dark side. *Journal of Innovation & Knowledge*, 8(2), 100335. DOI: https://doi.org/10.1016/j.jik.2023.100335.

Cano-Marin, E. (2024). The transformative potential of Generative Artificial Intelligence (GenAI) in business: a text mining analysis on innovation data sources. *Esic Market*, 55(2), e333. http://doi.org/10.7200/esicm.55.333.

Chae, H.C. (2024). In search of gazelles: machine learning prediction for Korean high-growth firms. *Small Business Economics*, 62, 243–284. https://doi.org/10.1007/s11187-023-00760-8

Chandler, A. D. (1962). *Strategy and structure: Chapters in the history of the industrial enterprise*. MIT Press

Coad, A., Domnick, C., Flachenecker, F., Harasztosi, P., Janiri, M. L., Pal, R. & Teruel, M. (2022). Capacity constraints as a trigger for high growth. *Small Business Economics*, 59, 893–923. https://doi.org/10.1007/s11187-021-00558-6

Cruz, M., Baghdadi, L., & Arouri, H. (2022). High growth firms and trade linkages: Imports do matter. *Small Business Economics*, 59, 79–92. https://doi.org/10.1007/s11187-021-00538-w

Darwish, N. A. (2022). High-growth entrepreneurial firms in extreme context: The case of Palestine. *Businesses*, 1, 486–500. https://doi.org/10.3390/10.3390/businesses2040031

Del Olmo-García, F., Crecente-Romero, F.J., Sarabia-Alegría, M., & del Val-Núñez, M.T. (2023). Why do gazelles grow? An analysis of the high-growth business environment in the Euro area. *Journal of Competitiveness*, 15(4), 87-111. https://doi.org/10.7441/joc.2023.04.06

Pereira, M., Pereira, F. M. (2024). How digital transformation shapes European union countries' national systems of innovation: A configurational moderation approach. *Journal of Innovation & Knowledge*, 9(4), 100578. http://doi.org/10.1016/j.jik.2024.100578.

El Hakioui, M. & Louitri, A. (2017). High-Growth SMEs: A Specific Research Object, *International Journal of Service Science, Management, Engineering, and Technology*, 8(2), 1-11. http://doi.org/10.4018/IJSSMET.2017040101

https://doi.org/10.7441/joc.2025.04.14

European Commission (2014). *Commission Implementing Regulation (EU) No 439/2014 of 29 April 2014 amending Regulation (EC) No 250/2009 implementing Regulation (EC) No 295/2008 of the European Parliament and of the Council concerning structural business statistics, as regards the definitions of characteristics and the technical format for the transmission of data.* Available at: *https://eur-lex.europa.eu/legal-content/GA/ALL/?uri=CELEX:32014R0439*

Ferrando, A., Pal, R., & Durante, E. (2019). Financing and obstacles for high growth enterprises: The European case. *EIB Working Paper* 2019 (03).

Flachenecker, F., Gavigan, J. P. Goenaga Beldarrain, X., Pasi, G., Preziosi, N., Stamenov, B. & Testa, G., (2020). *High Growth Enterprises: demographics, finance and policy measures*, Publications Office of the European Union, Luxembourg. https://doi.org/10.2760/34219.

Gibrat, R. (1931). *Les inégalités économiques*. Librairie du Recueil Sirey, París.

Henrekson, M. & Johansson, D. (2009). Competencies and Institutions Fostering High-growth Firms, *Foundations and Trends in Entrepreneurship*, 5 (1), 1-80

Henrekson, M. (2014). How labor market institutions affect job creation and productivity growth, *IZA World of Labor*, 38, 1-10. https://doi.org/10.15185/izawol.38

Hyde, K. (2021). *Alternative finance strategies for small business sustainability and growth* [Doctoral Dissertation, Walden University]. https://scholarworks.waldenu.edu/dissertations/10502

Julien, P.A. (2000). High Growth SMEs: Explanatory Factors, *Investigaciones Europeas de Dirección y Economía de la Empresa,* 6 (2), 39-56.

Khodor, S., Yela, A., & Ramadani, V. (2024). Impact of digitalization and innovation in women's entrepreneurial orientation on sustainable start-up intention. *Sustainable Technology and Entrepreneurship*, 3(3), 100078. https://doi.org/10.1016/j.stae.2024.100078.

Klingler-Vidra, R. (2016). When venture capital is patient capital: seed funding as a source of patient capital for high-growth companies, *Socio-Economic Review*, 14 (4), 691-708, DOI: https://doi.org/10.1093/ser/mww022.

Knobel, K.; Costa-Climent, R.; Haftor, D. M. (2024). Omnichannel-based value creation through the activation of business model themes: A multi-case exploration of retail firms. *Esic Market*, 55(1), e329. https://doi.org/10.7200/esicm.55.329.

Ko, C.-R., Lee, J. Y., & Seol, S.-S. (2021). Long-term growth patterns and determinants of high-growth start-ups - Focusing on Korean gazelle companies during 2006-2020. *Asian Journal of Innovation and Policy*, 10(3), 330–354. https://doi.org/10.7545/AJIP.2021.10.3.330

https://doi.org/10.7441/joc.2025.04.14

Krasniqi, B.A. (2012). Building an Expanded Small Firm Growth Model in a Transitional Economy: Evidence on Fast Growing Firms, *Journal of East-West Business*, 18 (3), 231-273. https://doi.org/10.1080/10669868.2012.728903

Krasniqi, B.A. & Desai, S. (2016). Institutional drivers of high-growth firms: country-level evidence from 26 transition economies, *Small Business Economics*, 47 (1), 1075–1094. https://doi.org/10.1007/s11187-016-9736-7

Lee, N. (2014). What holds back high-growth firms? Evidence from UK SMEs, Small Business Economics, 43 (1), 183–195. https://doi.org/10.1007/s11187-013-9525-5

Li, S., Gao, L., Han, C., Gupta, B., Alhalabi, W. & Almakdi, S. (2023). Exploring the effect of digital transformation on Firms' innovation performance. *Journal of Innovation & Knowledge*, 8(1), 100317. https://doi.org/10.1016/j.jik.2023.100317.

Lo, F-Y. & Chien, Y-Y. (2024). Digital internationalization of small and medium sized enterprises: online comments and ratings on Amazon platform, *Journal of Competitiveness*, 16(1), 146-166. https://doi.org/10.7441/joc.2024.01.09

Luo, Y., Yang, Z., Ren, Y., Škare, M., Qin, Y. (2024 Evaluating the Impact of AI Research on Industry Productivity: A Dynamic Qualitative Comparative Analysis Approach, *Journal of Competitiveness*, 16(3), 187-203. https://doi.org/10.7441/joc.2024.03.09

Marris, R. (1964). The economic theory of managerial capitalism. Free Press of Glencoe.

Mazzucato, M. & Parris, S. (2015). High-growth firms in changing competitive environments: the US pharmaceutical industry (1963 to 2002), Small Business Economics, 44 (1), 145–170. https://doi.org/10.1007/s11187-014-9583-3

Monteiro, G. F. (2019). High-growth firms and scale-ups: a review and research agenda, *RAUSP Management Journal*, 54 (1), 96-111. http://doi.org/10.1108/RAUSP-03-2018-0004

Moreno, A. M. & Casillas, J. C. (2000). High-growth enterprises (gazelles). A conceptual framework. Management and Marketing Department, Economics and Business Sciences Faculty, University of Seville.

Moreno, A. M. & Casillas, J. C. (2007) High-growth SMEs versus non-high-growth SMEs: a discriminant analysis, *Entrepreneurship & Regional Development: An International Journal*, 19 (1), 69-88. https://doi.org/10.1080/08985620601002162

Motoyama, Y., Henderson, C., Clevenger, M., Desai, S., Oh, S., & Van Maasakkers, T. (2023). Reflections on high growth firms. *Local Economy*, 38(6), 617-628. https://doi.org/10.1177/02690942241246725

North, D. C. (1990). Institutions, institutional change and economic performance. Cambridge University Press.

OECD (2010). High-Growth Enterprises: What Governments Can Do to Make a Difference, OECD Studies on SMEs and Entrepreneurship, OECD Publishing. https://doi.org/10.1787/9789264048782-en

https://doi.org/10.7441/joc.2025.04.14

OECD (2011). Financing High-Growth Firm: The Role of Angel Investors, OECD Publishing. http://doi.org/10.1787/9789264118782-en

Penrose, E. (1959). The theory of the growth of the firm. Wiley.

Plaza-Casado, A.; Blanco-Gonzalez, A.; Rivero-Gutierrez, L. (2024). Exploring the impact of legitimacy on the competitiveness of international firms. *ESIC MARKET*, 55(3), e369. http://doi.org/10.7200/esicm.55.369.

Queirós, M., Braga, V. & Correia, A. (2019). Cross-country analysis to high-growth business: Unveiling its determinants, *Journal of Innovation & Knowledge*, 4 (3), 146-153. https://doi.org/10.1016/j.jik.2018.03.006

Rees-Jones, R., Brown, R. & Jones-Evans, D. (2024). Trigger Points and High Growth Firms: The Vital Role of Founder "Sensing" and "Seizing" Capabilities, *International Journal of Entrepreneurial Behavior & Research*, 30 (1), 1-22. https://doi.org/10.1108/IJEBR-05-2023-0533

Ruiz, M., Fuentes, M. M. & Ruiz, J. M. (2016). An international study of the factors explaining high-growth expectation in new ventures: a gender perspective, *Review of Business Management*, 18 (60), 171-190. https://doi.org/10.7819/rbgn.v18i60.1947

Sallenave, J. P. (1984). Dirección general et estrategia d´entreprise. Les Editions d´Organisation, París.

Schreyer, P. (2000). High-Growth Firms and Employment, OECD Science, Technology and Industry Working Papers, 2000/03. https://doi.org/10.1787/18151965

Simbaña-Taipe, L. E., Ushiña, D. C., & Salas, M. (2019). Key determinants for growth in high-growth Ecuadorian manufacturing firms. *International Journal of Management and Enterprise Development*, 18(4), 293-315. https://doi.org/10.1504/IJMED.2019.10022926

Saleem, M., Tariq, A., Amber, Q., Janovska, K. & Ferraris, A. (2024). Tech revolution unleashed: Navigating the winds of digital transformation in the fast lane. *Journal of Innovation & Knowledge*, 9(4), 100551. https://doi.org/10.1016/j.jik.2024.100551.

Tagscherer F., Carbon C. (2023). Leadership for successful digitalization: A literature review on companies' internal and external aspects of digitalization. *Sustainable Technology and Entrepreneurship*, 2(2), 100039. https://doi.org/10.1016/j.stae.2023.100039.

Teruel, M. & de Wit, G. (2011). Determinants of high-growth firms: why do some countries have more high-growth firms than others? Document de treball, 33, Universitat Rovira I Virgili.

Uddin, M. R. (2024). The role of the digital economy in Bangladesh's economic development. *Sustainable Technology and Entrepreneurship*, 3(1), 100054. https://doi.org/10.1016/j.stae.2023.100054.

Vértesy, D., Del Sorbo, M. & Damioli, G. (2017). High-growth, innovative enterprises in Europe, Publications Office of the European Union, Luxembourg. https://doi.org/10.2760/328958

Wang, X., Xu, Z., Qin, Y., & Skare, M. (2023). The role of digital technologies in firms' performance: A panel data study on family firms and SMEs, *Journal of Competitiveness*, 15(2), 151-166. https://doi.org/10.7441/joc.2023.02.08

Wiklund, J., Patzelt, H. & Shepherd, D.A. (2009). Building an integrative model of small business growth. *Small Business Economics*, 32 (1), 351–374. https://doi.org/10.1007/s11187-007-9084-8

Yoshikuni, AM C., Dwivedi, R., Kamal, M., Zhou, D., Dwivedi, P. & Apolinario, S. (2024). A dynamic information technology capability model for fostering innovation in digital transformation. *Journal of Innovation & Knowledge*, 9(4), 100589. https://doi.org/10.1016/j.jik.2024.100589.

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