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(RESEARCH ARTICLE)

Year of founding as a determinant of start-up success

Barbora Marie Nováková [1,*] and Beenish Sarfaraz [2]

[1]. *Barbora Marie Nováková Nováková, Postgraduate student, Department of Finance, University of Finance and Administration, Prague, Czech Republic.*
[2] *Beenish Sarfaraz, Master of information technology, Postgraduate student, University of north america, Fairlakes Virginia, USA.*

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Abstract

This paper examines the impact of year of founding and type of funding on the growth of startups, as measured by average number of employees, and analyses the differences between different business areas. The data was obtained from a large database of startups and was thoroughly cleaned before analysis. Descriptive statistics, correlation analysis and cluster analysis by funding type and business area were used.

The results show that year of founding and funding type are significant factors influencing startup growth. Startups funded through Private Equity (PE) Growth had the highest average number of employees, while startups with Series B and Later Stage VC funding showed strong and stable growth. In addition, specific trends were identified in different business areas. Sectors such as Mobility & Transportation and Sales and Marketing show strong growth influenced by the year of founding, while sectors such as Govtech have less growth likely due to specific regulatory requirements.

The study highlights the importance of year of founding and type of funding for startup growth and provides valuable insights for founders and investors when planning expansion and funding strategies. The results also suggest the need for further research that considers geographic, macroeconomic and qualitative aspects of startup success.

Keywords: Startups; Year Founded; Type of Funding; Employee Growth; Area Of Entrepreneurship; Private Equity; Venture Capital; Innovation; Entrepreneurship.

1. Introduction

Startups play a key role in the modern economy, bringing innovation, creating new jobs and contributing to economic growth. However, their success depends on many factors such as access to finance, geographical location, business sector and more. One of the less frequently examined, but potentially important, factors is the year in which the startup was founded. This factor can influence not only the initial conditions under which a startup is founded, but also its ability to grow and adapt to changing market conditions.

The past two decades have witnessed dramatic changes in the technological and economic environment that have created unique opportunities and challenges for new businesses. For example, the dot-com bubble period in the late 1990s brought an unprecedented influx of investment in technology startups, while the subsequent crisis led to the demise of many of them. Similarly, the 2008 financial crisis had a profound impact on the availability of venture capital and the willingness of investors to take risks, affecting the growth and survival of startups founded during this period.

This article aims to answer the following three scientific questions:

* Corresponding author: Barbora Marie Nováková

- What is the relationship between a startup's year of founding and its growth as measured by the number of employees?
- How do different types of funding affect the growth of startups depending on their year of founding?
- Are there specific areas of business where the year of founding is a more significant factor in the success of startups?

The answers to these questions will allow us to better understand how the year of founding affects the growth and success of startups, and offer valuable insights for startup founders, investors and policymakers seeking to foster innovation and the entrepreneurial ecosystem.

This study aims to explore how the year of founding affects startup growth, primarily measured by the number of employees. It will also look at the interaction between year of founding and type of funding to provide deeper insights into the growth dynamics of startups in different economic and market conditions. The results of this study can provide valuable insights for startup founders, investors and policymakers seeking to foster innovation and the entrepreneurial ecosystem.

2. Literature Review

The year a startup is founded can significantly impact its growth and success. This factor can reflect the broader economic, technological and social contexts in which a startup is created. In this chapter, we focus on how different time periods of startup founding affect startup growth, measured mainly by the number of employees, and why this aspect is important for understanding the dynamics of the startup environment.

A startup's founding year often reflects specific economic conditions that can significantly affect its growth opportunities. Startups founded during periods of economic growth can benefit from better availability of capital, more optimistic market conditions and greater willingness of investors to take risks. Conversely, startups founded during economic crises may face greater challenges such as limited access to finance, lower consumer confidence and increased competition for scarce resources.

A study by Robb and Robinson (2014) found that startups founded during economic growth years exhibited faster growth and greater resilience to market shocks. These startups had better access to venture capital and were able to expand faster due to more favorable market conditions. On the other hand, Koellinger and Thurik (2012) showed in their study that startups founded during economic recessions often developed more innovative and adaptive strategies to survive in adverse environments, which may have led to their long-term sustainability.

The year a startup is founded may also reflect specific regulatory and political conditions. Changes in legislation, tax policy and business support can create a more or less favourable environment for the creation of new companies. For example, changes in pro-business legislation may facilitate the creation and growth of new firms, while stricter regulations may limit their ability to expand. Karlsson and Dahlberg (2003) in their study on regional development and firm growth highlighted that the regulatory and policy environment plays a key role in promoting or hindering entrepreneurial activity. Startups that emerge during periods of entrepreneurial support often have better access to infrastructure, financing, and networks of contacts, which support their growth and success.

Technological innovations and trends have a significant impact on the success of startups, and the year of founding can be a key factor in determining what technological tools and platforms were available when a startup was founded. Startups founded during periods of rapid technological advancement may have an advantage in access to new technologies, which can boost their innovation and competitiveness.

Guzman and Stern (2015), in their study on geographic clusters of innovation, found that startups based in technology hubs such as Silicon Valley had better access to technological innovation and resources, which supported their growth. This factor is also important in the context of the year of founding, as startups formed during periods of rapid technological progress may have better conditions for innovation and growth.

Specific case studies show how the year of foundation affects the growth of startups. For example, the dot-com bubble period in the late 1990s brought an unprecedented influx of investment in technology startups, leading to the rapid growth of many firms. However, the subsequent crisis led to the demise of many of them, indicating the risks associated with certain periods (Karlsson & Dahlberg, 2003). Another study by Chatterji, Glaeser, and Kerr (2014) showed that startups founded during economic recessions were more likely to survive due to adaptive strategies and innovation.

These startups often benefited from less competition and were able to develop unique products and services that allowed them to survive and grow in challenging conditions.

The year a startup is founded is a significant factor in its growth and success. The economic, regulatory and technological conditions that prevail at the time of a startup's inception can have a long-term impact on its ability to grow and adapt to changing market conditions. Research shows that startups founded during periods of economic growth and technological innovation often have better conditions for success, while those founded during economic recessions may develop more adaptive and innovative strategies. These findings are important for startup founders, investors and policymakers seeking to foster innovation and the entrepreneurial ecosystem.

3. Methodology

The data used in this study was obtained from a database containing information on various startups. This database included key variables such as the year the startup was founded, number of employees, type of funding, and area of business. The data was thoroughly cleaned before analysis to ensure accuracy and completeness.

First, records with missing data in key variables, namely year of incorporation, number of employees, and type of funding, were removed. The year of establishment was converted to an integer format to ensure consistency in the analysis. Similarly, other key variables were checked and adjusted where necessary.

To answer the research questions, the following analytical techniques were used: basic descriptive statistics were calculated for all key variables to gain insight into the distribution of the data and to identify underlying trends. Correlation analysis was used to examine the relationship between year of founding and startup growth (as measured by number of employees). The correlation coefficient provided information on the strength and direction of the relationship between the two variables.

Startups were further divided into groups by funding type (e.g. PE Growth, Series B, Later Stage VC, Series C2) and the average number of employees for each group was calculated based on the year of founding. This analysis allowed us to identify differences in growth trajectories between the different funding types. Similarly, startups were grouped by business area (e.g. Mobility & Transportation, Govtech, Sales and Marketing, Climate Tech & Green Tech, Communications). For each area, the average number of employees was calculated depending on the year of founding, which allowed for the identification of specific trends and challenges in different sectors.

To better understand the results, graphs were created to illustrate the relationship between year of establishment and average number of employees for different funding types and business areas. These visualisations included line graphs showing the average number of employees by year of establishment for different types of financing and business areas.

It is important to consider the limitations of this study when interpreting the results. The data may contain selection bias if they are not fully representative of all startups in a given period or business area. Missing data may affect the accuracy and validity of the analysis. The study also does not account for macroeconomic, political and technological factors that can have a significant impact on the growth of startups.

The following software tools were used for data analysis and charting: Python for data cleaning, statistical analysis and visualization, Pandas for data manipulation and analysis of data frames, and Matplotlib and Seaborn for charting and visualization. This methodology provides a systematic approach to analyzing the impact of year of founding and type of funding on startup growth and provides a robust basis for interpreting the results.

4. Results and Discussion

4.1. What is the relationship between the year a startup was founded and its growth as measured by the number of employees?

The results indicate a moderately strong negative relationship (correlation coefficient -0.39) between these two variables. This means that startups founded in later years tend to have a smaller average number of employees than those founded earlier.

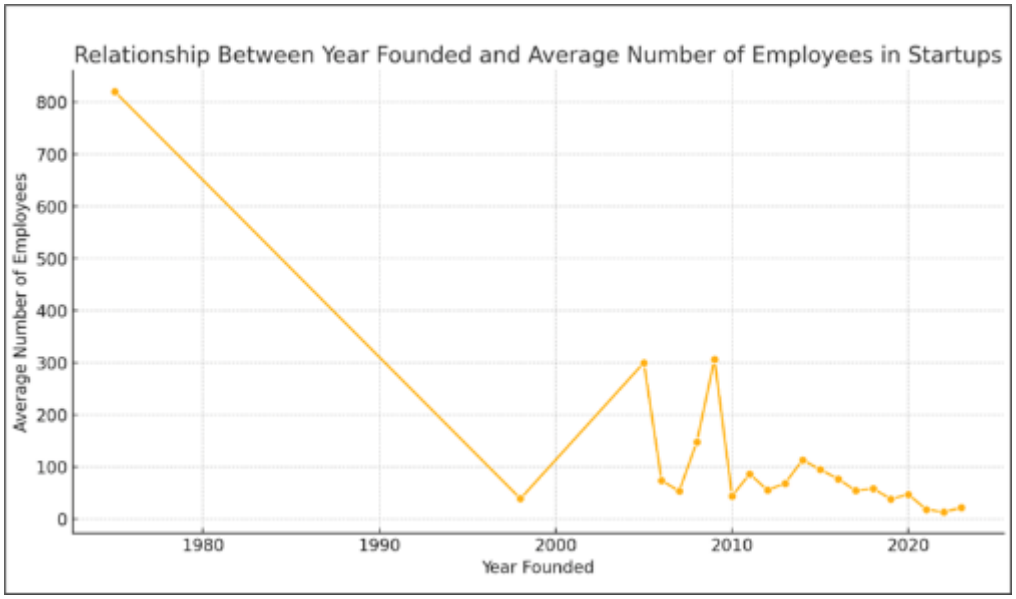

Figure 1 The relationship between the year a startup was founded and the average number of employees.

The chart shows that the average number of employees tends to decrease as the year of the startup's founding increases. For example, startups founded in 2015 had an average of 4 employees, while those founded in 2019 had an average of 15 employees. This trend may be influenced by several factors, including technological innovations that reduce the need for large numbers of employees and changing economic conditions that may affect the availability of funding.

Some years show significant fluctuations in the average number of employees. For example, startups founded in 2017 had an average of 62 employees, well above averages in other years. These fluctuations may be due to specific events or changes in the market that affected the growth of startups during the period. Economic recessions or tech boom periods can dramatically affect the size of emerging startups.

Thus, the results suggest that the year of founding is a significant factor affecting startup growth, as measured by the number of employees. Newer startups tend to be smaller, which may be a result of modern technology trends, limited access to financing, and other economic factors. These findings are important for startup founders and investors, who can use this information to better understand the growth dynamics of startups over different time periods.

4.2. How do different types of funding affect the growth of startups depending on their year of founding?

The analysis shows that the type of funding significantly affects the growth of startups depending on the year of their founding. The data suggest different growth trajectories for different types of funding and their interaction with year of founding.

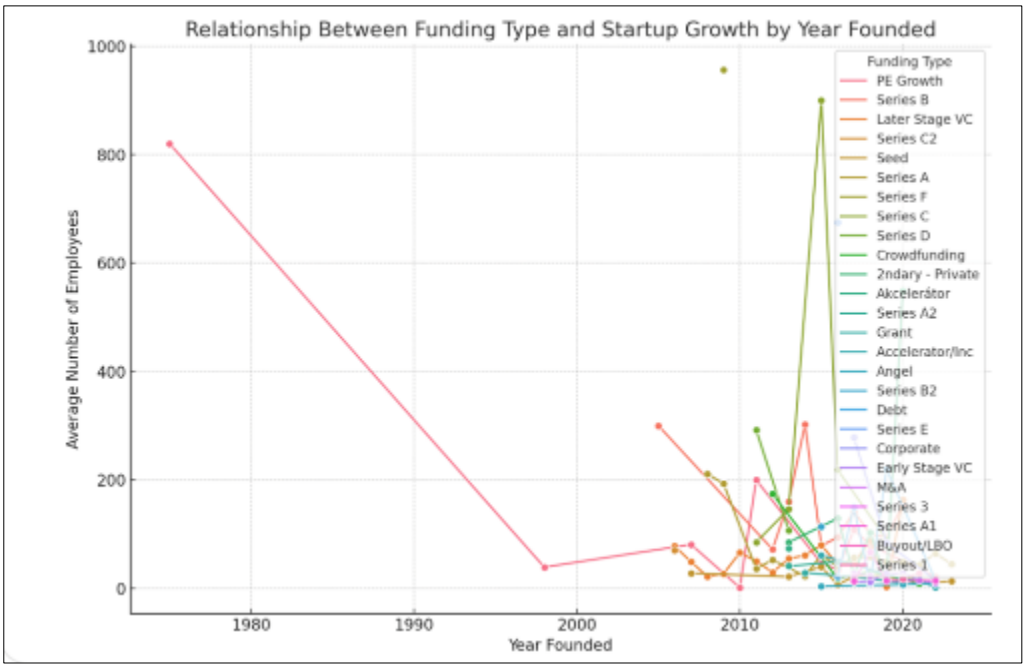

Figure 2 The relationship between Funding type and Startup growth by year funded

4.2.1. Private Equity (PE) Growth

Startups funded through PE Growth have shown significant growth in headcount, especially in earlier years. For example, startups founded in 1975 with this type of funding had an average of 820 employees, while those founded in 1998 had an average of 39 employees. This dramatic difference may be due to economic conditions and the availability of capital during these periods.

4.2.2. Series B

Startups funded through Series B are also showing strong growth. In 2005, startups with this type of funding had an average of 300 employees. This suggests that startups at this stage of development may have stable business models and are able to effectively use the funds raised to expand.

4.2.3. Later Stage VC

Later Stage VC funding supports steady employee growth. For example, startups founded in 2006 had an average of 78 employees with this type of funding. This type of funding is typically used by startups that already have a proven product or service and are focused on scaling their business.

4.2.4. Series C2

Startups funded through Series C2 are also showing significant growth. In 2006, startups with this type of funding had an average of 70 employees. This type of funding is often used for further expansion and market positioning.

4.3. Are there specific areas of business where the year of founding is a more significant factor in the success of startups?

The analysis of the relationship between the year of establishment and the average number of employees in different business areas shows that the year of establishment has different significance depending on the specific business area. The data suggest that some sectors are more sensitive to the year of establishment than others.

4.3.1. Mobility & Transportation

Startups in Mobility & Transportation show significant growth in the number of employees, especially in earlier years. For example, startups founded in 1975 had an average of 820 employees. This growth may be driven by long-term investments in infrastructure and technology that are key to the sector.

4.3.2. Govtech

Govtech startups show less growth in the number of employees. Startups founded in 1998 had an average of 39 employees. This sector can be affected by specific regulatory and government requirements that can limit rapid growth.

4.3.3. Sales and Marketing

In Sales and Marketing, startups founded in 2005 had an average of 300 employees. This strong growth suggests that startups in this sector can scale their operations quickly and use marketing strategies to expand.

4.3.4. Climate Tech & Green Tech

Startups are showing steady growth in Climate Tech & Green Tech. For example, startups founded in 2006 had an average of 70 employees. This sector can benefit from the growing interest in sustainability and environmental technologies.

4.3.5. Communications

Startups in Communications are also showing steady growth. For example, startups founded in 2006 had an average of 78 employees. This sector is key to the modern economy and its growth is supported by continuous innovation in communications.

4.4. Overall results

The analysis showed that the year of founding and the type of funding have a significant impact on the growth of startups, as measured by the average number of employees. In addition, this effect was shown to vary by different business areas.

Startups funded through Private Equity (PE) Growth had the highest number of employees on average. For example, startups founded in 1975 had an average of 820 employees, while those founded in 1998 had an average of 39 employees. This dramatic difference may be due to economic conditions and the availability of capital during these periods. Startups funded through Series B have also shown strong growth, with an average of 300 employees for startups founded in 2005. This strong growth suggests that startups at this stage of development may have stable business models and are able to effectively use the funds raised to expand. Later Stage VC funding has supported steady employee growth. For example, startups founded in 2006 had an average of 78 employees with this type of funding. This type of funding is typically used by startups that already have a proven product or service and are focused on scaling their business. Startups funded through Series C2 also showed significant growth. In 2006, startups with this type of funding had an average of 70 employees. This type of funding is often used for further expansion and market positioning.

In Mobility & Transportation, startups have shown significant growth in headcount, especially in earlier years. Startups founded in 1975 had an average of 820 employees, indicating a significant impact of the year of founding on growth. This growth may be influenced by long-term investments in infrastructure and technology, which are key to the sector. Govtech startups showed less growth in the number of employees. Startups founded in 1998 had an average of 39 employees. This sector may be affected by specific regulatory and government requirements that may limit rapid growth. In Sales and Marketing, startups founded in 2005 had an average of 300 employees. This strong growth suggests that startups in this sector can scale their operations quickly and use marketing strategies to expand. In Climate Tech & Green Tech, startups showed steady growth. Startups founded in 2006 had an average of 70 employees. This sector can benefit from the growing interest in sustainability and environmental technologies. Startups in Communications also showed steady growth. Startups founded in 2006 had an average of 78 employees. This sector is key to the modern economy and its growth is supported by continuous innovation in communications.

The results suggest that the year of founding and the type of funding are key factors influencing startup growth. Sectors such as Mobility & Transportation and Sales and Marketing show significant growth influenced by the year of founding, while sectors such as Govtech have lower growth likely due to specific regulatory requirements. These insights are valuable for startup founders and investors when planning expansion and funding strategies.

5. Conclusion

This paper examined the impact of year of founding and type of funding on startup growth, as measured by average number of employees, and accounted for differences between different business areas. The analysis showed that year of incorporation and type of funding are significant factors affecting the growth of startups.

Private Equity (PE) Growth funding tended to support more employee growth, especially for older startups. Series B funding showed strong growth in certain years, while Later Stage VC funding supported steady employee growth. Series C2 funding also showed significant growth in later stage startups.

The year of founding proved to be a key factor in different areas of the business. Sectors such as Mobility & Transportation and Sales and Marketing saw significant growth, which was significantly influenced by the year of incorporation. On the other hand, sectors like Govtech showed less growth, probably due to specific regulatory hurdles and requirements.

These results provide valuable insights for startup founders and investors. Understanding the impact of founding year and funding type on startup growth can help in strategic planning and funding decisions. Investors can use this information to identify potentially successful startups and tailor their investment strategies to the specific needs and characteristics of each sector.

This research received no external funding.

5.1. The author declares no conflict of interest.

Despite the valuable insights that this study provides, it is important to note several limitations that may affect the interpretation of the results and their generalization. The study is based on a specific sample of data, which may only include certain startups and may not be fully representative of the overall startup ecosystem. The range and diversity of startups in the data may affect the results, and therefore caution is needed when generalizing conclusions to a broader population. There may be missing data in the dataset that could affect the accuracy of the analysis. Some startups may not have complete information on number of employees, type of funding, or exact year of founding, which can lead to inaccuracies in the conclusions.

The study does not consider the impact of broader macroeconomic and political factors that can have a significant impact on startup growth. Factors such as economic recessions, political changes, and technology trends can affect the availability of funding and growth opportunities for startups, and these influences were not explicitly included in the analysis.

This study focuses primarily on quantitative data on the number of employees and type of funding. Qualitative aspects such as leadership, company culture, innovation and strategy are not considered in the analysis, yet they can play a key role in the success of startups.

The type of funding can change over time, which can affect the growth of a startup. The study does not take into account the dynamics of changes in startup funding, such as transitions between different types of funding at different stages of startup development.

Despite the valuable insights gained from this study, there remain several areas that merit further investigation. Below are some suggestions for future research that could provide a deeper understanding of the dynamics of startup growth and the impact of various factors on their success. Further research could include a geographical analysis of the impact of year of founding and type of funding on startup growth. Regional differences in funding availability, access to talent and regulatory conditions can have a significant impact on startup growth opportunities. Comparisons between different regions or countries could reveal other important factors affecting startup success.

Future studies could consider the impact of macroeconomic and political factors such as economic recessions, political stability and technology trends on startup growth. These factors can significantly affect the availability of funding and market conditions, which could provide deeper insights into the context in which startups operate. While this study focuses on quantitative data, future research could consider qualitative aspects such as firm leadership, corporate culture, innovation and strategy. Qualitative research could provide deeper insights into the internal factors that contribute to the success of startups and identify best practices that can be replicated.

Research could also examine the dynamics of changes in startup funding over time. Changes in funding types, such as the shift from seed funding to venture capital, can have a significant impact on the growth and development of startups. Analysis of these changes could reveal key moments when startups receive crucial financial support. Future research could focus on the long-term success and sustainability of startups. Analysis of the factors that contribute to long-term sustainability could provide valuable insights for founders and investors. Exploring how startups manage different growth phases and how they adapt to changing market conditions could provide useful strategies for long-term success. Further research could include comparative studies between different business sectors to better understand the specific challenges and opportunities that startups in different sectors face. Identifying sector-specific success factors could yield more targeted recommendations for founders and investors in different sectors.

These suggestions for further research can contribute to a better understanding of the complex environment in which startups operate and provide valuable information to support their growth and success.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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