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Accelerators and Decelerators of Scaleup Growth: Key Factors and Circumstances for Sustainable Expansion

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ABSTRACT:
Scaleup is the development phase of a start-up that has solved its initial problems and is facing the challenge of achieving significant business rise and growth. However, it is still a small company whose growth is not easy. The goal of the research is to deepen and expand knowledge about the circumstances and factors that accelerate and/or slow down its growth. The source of new knowledge is field research on a sample of 97 scaleups. Researchers have personal experience from guided interviews with scaleup founders, which they recorded in the questionnaire. Respondents' statements were analyzed using critical discourse analysis (CDA) with the support of artificial intelligence. The result of the research is the identification of external growth accelerators, external growth decelerators, internal growth accelerators, and internal growth decelerators of scaleups. Each group of factors influencing growth contains five factors, the order of which corresponds to the weight of their positive or negative impact on growth. In addition, other accompanying circumstances affecting growth were similarly identified. The acquired knowledge can be used to evaluate the growth possibilities of a particular scaleup and to implement corrective measures according to the external and internal possibilities of the company. The research revealed an original and complex structure of factors and circumstances that influence the growth of scaleups and thus contribute to improving strategic thinking in this type of enterprise.

Keywords: scaleup, accompanying circumstances of growth, external and internal growth accelerators, external and internal growth decelerators.

1. Introduction

The Erasmus Centre for Entrepreneurship defines a scaleup as an enterprise (van Winden et al., 2020) with at least ten full-time employees and/or a turnover of at least 5 million euros for three consecutive years. According to Nordic Scalers (2017), scaleups are companies with a turnover of more than 2 million. euros, generated revenues in the previous three years, have at least ten employees and grew at least 20% in the previous three years. Venture capital (Duruflé et al., 2017) defines a scaleup as a company that has completed the seed stage and passed the series A investment stage. It is seeking a series B or is even in the next stage of funding. A start-up becomes a scaleup after it has validated

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its business model (Monteneiro, 2019), solved initial problems, and is ready for exponential growth.

One of the main reasons for interest in high-growth companies and scaleups is (Monteneiro, 2019) that they play an important role in job creation and productivity growth. Scaleups play an important role in the entrepreneurial ecosystem (Brown et Mason, 2019) as they mentor start-ups, attract capital, and generate spill-over effects. Storey and Greene (2010) argue that "small enterprises, which become medium-sized and eventually large in a relatively short period, are the center of economic prosperity". Čapliar and Melková (2018) write that the member countries of the European Union should support scaleups and their growth more and focus less on the creation of new companies because the so-called scaleup gap is emerging.

The dominant research topic of scaleups is scaling. In the report on scaleups in the UK, several barriers to scaling were identified, namely market access, lack of business experience, and access to finance. Two themes dominate namely finance and managerial talent (Mason, 2018). Harnish (2014) lists leadership, funding, and infrastructure as the biggest barriers to scaling companies. He notes that academic research on scaleups is almost absent. Too few European start-ups survive the critical period of 2 to 3 years and even fewer grow into larger enterprises (Zajko, 2017). Findings from research by Slávik et al. (2020) document the slow growth of the vast majority of start-ups. The first ten most efficient start-ups in Slovakia, de facto scaleups sorted by the amount of revenue, earned from 0.98 to 8.28 million euros in 2019, and four of them were at a loss, the average return on revenue for profitable start-ups was 4.94%. Sales and performances are not exceptional yet. The reason for the unimpressive performance is also a small involvement in the European and world markets, or inability to get there.

The scope for new, further research on scaleups remains in the topic of scaling and opens up a deeper and broader examination of the factors and circumstances that influence the growth of scaleups. **The research question** is, which factors and circumstances encourage or dampen the growth of scaleup development? **The aim of the research** is to identify directly acting external and internal accelerators and decelerators of growth in ordinal order and other circumstances also identified in ordinal order that accompany and influence growth.

2. Literature analysis

Scale-ups are often associated with digitization and the IT sector (Adner et al., 2019). The software has natural conditions for scaling because the marginal cost of serving a market of any size is virtually zero (Sullivan, 2016). Scaleups are not only in the IT sector, but IT also accompanies them abundantly in other industries (Coad et al., 2024, p.19-30). If scaleups exist in other industries, they are in many cases driven by IT capabilities, e.g. Uber in the taxi industry, and Airbnb in the hotel industry (Coad et al., 2024, p.20-21**). The presence of scaleups in various industries** is captured by the European Scaleup Monitor (2024, p.31) in order from the largest to the smallest occurrence: J - Information and communication, N - Administrative and support service activities, M - Professional, scientific and technical activities, F - Construction, H - Transportation and storage, K - Financial and insurance activities, I - Accommodation and food service activities, Q -

Human health and social work activities, R - Arts, entertainment and recreation, D - Electricity, gas, steam and air conditioning supply.

The choice of industry objectively conditions the growth possibilities of the scaleup. However, **the growth prospects of the industry** are not easy to identify, especially if they are accompanied by discontinuous changes. For this purpose, it is necessary to collect, analyze and interpret an ever-increasing amount of data. Mühlroth et Grottke (2022) address this issue using a structured process model to support strategic foresight. Nenonen et Storbacka (2020) outline a process model of market formation. Ghezzi (2019) sees growth prospects between two possibilities when an opportunity can be discovered (found) or created. Scaleups are still small companies with very limited resources, so they actively act and improvise/bricolage rather than precisely identify the growth prospects of an industry to seize the opportunity that is emerging.

Scaleups are naturally expected to fill the industry's growth prospects with **products and services that are new and original** and that satisfy existing needs in a new way or create new needs. Therein will lie their growth opportunities. There are complex algorithms for determining the novelty of a product or service (Catteneo et al., 2021; Jagtap, 2016) and specialized software for searching for novelty in product lines (Xiang et al., 2022). Vasutinska et Kuzminska (2019) proposed an integrated indicator that differentiates truly new products from pseudo-new products with which the market is saturated. Hsieh et al. (2019) write that only radical innovations, i.e. with a high level of innovative novelty, are relevant for company growth. In favor of scaleups, it is known that new entrants implement more innovative technologies than incumbents (Callender at Matouschek, 2021). A kind of originality and novelty is characteristic of NFT (non-fungible token), which contains a digital signature, which makes it unique, e.g. artworks, games, and more (Bamakan et al., 2022). Non-fungible means that something is unique and cannot be replaced. Dabrowski (2022) writes in his study that a new product is characterized not only by novelty but also by meaningfulness. He found that meaningfulness affects business performance more strongly than product novelty. Similar findings were also reached by Phuoc Vo et al. (2022) when they found that although the novelty attracts the attention of consumers, the purchase is more determined by meaningfulness.

A scaleup is a mutation of a start-up that achieves high growth as a result of **the commercialization** of a previous entrepreneurial effort. According to Mazzarol et al. (2022) commercialization includes seven elements with the attribute new: products, processes, invention or reconfiguration of technology, markets, intellectual property rights, knowledge transfer, management of new product development. The entire process of commercialization is characterized by a high degree of market and technological uncertainty (Haessler et al., 2023; Bonnín Roca et al., 2017). Customers mostly do not know how to take advantage of the new value proposition and new companies have no history (Myers et Albats, 2024). Many business projects fail due to incorrect knowledge of industrial partners' needs and expectations, as well as legal and formal requirements (Malec et al., 2020). Scaleups in the commercialization process establish partnerships to complete missing resources (Min et al., 2020; Budi et Aldianto, 2020). Unmanaged commercialization increases the risk of business closure (Yoo and Jung, 2024).

All companies and scaleups thrive **if they are internally well-prepared for growth**. Balse et Leinwand (2024) write about the five elements of the growth system, which are the grouping of the right capabilities, the creation of the right operating model, the constant renewal of knowledge, the measurement of return and reallocation of investments, and finally a convincing result for the customer. Churchill et Mulins (2001) consider the operating cash cycle, cash needed to finance sales, and cash generated by sales as critical growth factors. The mobilization of financial resources in the initial phase of company growth is also considered an important growth factor by Rannikko et al. (2022). Taupin et al. (2021) point to the limited growth of technology start-ups that want to increase growth in the scaleup phase by means of replicating the business model, but this is usually not enough. An extensive list of obstacles to the transition from start-ups to scaleups and thus barriers to company growth was formulated by Soleimani et al. (2023), they are e.g. internal weaknesses in orientation in the external environment, team problems, insufficient leadership of the founders, insufficient value proposition, inappropriate time to expand the business and others. Start-ups also fail to grow (Eisennmann, 2021) because founders make two common mistakes: not engaging the right partners and jumping into the first opportunity without verification. The growth of scaleups also brings unpleasant consequences. The rate of employee burnout increases and job satisfaction decreases (Genedi et al., 2024), which in turn negatively affects growth.

Even well-prepared companies can only grow **in an environment that provides favorable opportunities for growth**. Uncertainty in the external environment is a phenomenon that is perceived unfavorably, but the period of uncertainty can also be used to identify opportunities, and then to act thoughtfully to empower/dominate them (Gulati, 2023). Acquisitions of prospective companies are a frequent external source of growth. Acquirers see opportunities for growth in them, and scaleups, in turn, look for strategic partners who have resources for scaling (Burger et al., 2023). The acquisition has a positive effect on scaleups, increasing revenues (number of employees) by 9 to 13% (6 to 10%) throughout five (four) years compared to control companies. The scope for scaling and external growth factors is provided by the commercialization of academic research results (Carrick, 2023) and the transition from laboratory-scale to industrial scale-up (Weng et al., 2023). Scaling and continuous rapid growth often contain an explicit international business dimension (Tippmann et al., 2023). Public policymakers are increasingly focused on scaleups because they believe that public resources should be devoted more to supporting existing high-growth companies than to establishing new companies (Garcia-Tapial et al., 2023). However, growth strategies also fail because companies focus excessively on identifying a golden opportunity, but ignore other components of the strategy or do not know the connections between the components (Collis, 2021).

A significant body of knowledge **combines internal and external factors of growth into a single whole**. According to Pisano (2024), the growth strategy is based on three interrelated decisions: 1. determine the rate of growth, 2. where to look for new sources of demand (growth direction), 3. how to gather the financial, human and organizational resources necessary for growth (growth method). Rayport et al. (2023) in scaleup research identified the necessary conditions for growth: a robust market, a product different from the competition, and sufficient conditions for growth: effective go-to-market strategy, proven monetization, network and density effects, growing revenues, and

sufficient capital. They consider an ambidextrous organization that can experiment strategically and act in a disciplined manner at the same time as a critical condition for growth. However, companies in their pursuit of growth must overcome both external and internal obstacles, which Gibson and Bhattacharya (2023) compiled in the following order: 1. Access to finance, 2. Access to talent and skills, 3. Infrastructure and planning, 4. Access to markets, 5. Government procurement and regulation, 6. Culture, leadership, and management, formulating recommendations for public policies. The weaker side of the existing knowledge about the growth of scaleups is not its lack, but the low level of its systematic, clear and comprehensive arrangement, which would improve its understanding and thus support the strategy of rapid growth.

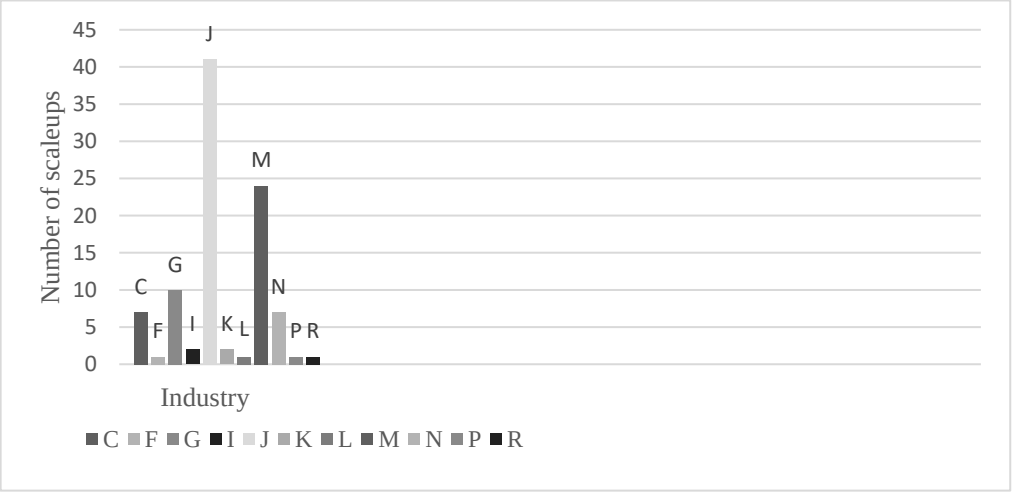
Conclusion of the literature analysis. Known facts: scaleups do business in the IT sector and industries with a strong IT presence; growth prospects are researched and measured using relatively complex methods; the tendency to create relatively complex novelty identifiers; the commercialization process is formally well described and is an existential theme of scaleups, but without a hierarchy of key themes/issues; the factors that influence or slow down the growth of scaleups are generally formulated without an explicitly expressed positive or negative impact, the identification of a positive impact without a hierarchization of complexly arranged factors is significantly predominant, complex schemes of external and internal factors that not only accelerate but also slow down growth are not compiled. Unknown insights: other industries that prefer scaleups besides the IT sector; consideration of scaleups on the growth prospects of the industry with regard to their capacity possibilities; confirmation of the actual novelty of products and services; hierarchy of key commercialization topics, complex visualization of hierarchically arranged factors accelerating or slowing down growth. Research gap: To identify new knowledge that will contribute to a better understanding of the direct factors of scaleup growth (accelerators and decelerators) and accompanying circumstances of scaleup growth (industry choice, industry growth, product and service novelty, commercialization).

3. Research methodology

The research question and research objective will be answered and achieved through a **research design** that is based on field research of scaleups that actually do business and the use of qualitative research methods. Field research allows researchers to gain direct experience with a specific object of research, and qualitative research leaves the respondent with a reasonable degree of freedom in formulating answers that may bring new, unexpected knowledge.

Research sample and field research. The research was conducted between October and December 2023 on a sample of 133 small and medium-sized enterprises in the territory of the Slovak Republic. The original number was reduced to 97 enterprises that meet the characteristics of scaleup, namely min. 10 employees, generating revenue in the previous three years, 20% growth in the previous three years, passing the investment phase series A, the minimum turnover condition was not set. Formal industry affiliation was not requested but is recorded. The research was conducted in the form of a structured questionnaire in direct contact between the respondent (usually the founder of the

company) and the researcher. Additional information was obtained from the website of the company, publicly accessible databases, and professional journals that published interviews with founders and reports on scaleups. Industry inclusion of the investigated scaleups according to SK NACE (order according to the number of scaleups doing business in the sector): J - Information and communication: 41, M - Professional, scientific and technical activities: 24, G - Wholesale and retail trade: 10, C - Industrial production: 7, N - Administrative and support service activities: 7, I - Accommodation and catering services: 2, K - Financial and insurance activities: 2, F - Other building completion and finishing work: 1, L - Real estate activities: 1, P - Education: 1, R - Arts, entertainment and recreation: 1 (Graph 1).



Graph 1. Industry inclusion of the investigated scaleups according SK NACE

Data collection. Field research dealt with the collection of qualitative data that describe the type of products/services and the value offered, provide evidence of the originality of the products/services offered, characterize the problems of commercialization of the developed products/services, and evaluate the growth prospects of the industry. These data express the accompanying circumstances of scaleup growth. Additional data characterizes internal and external factors that accelerate or slow down the growth of scaleups. Respondents answered explicitly posed questions/challenges: Describe the new product/service and its utility for the customer. Submit proof of the originality of the new product/service. List the specific problems that prevent the successful commercialization of the results of the development of a new product/service. How do you assess the growth prospects of the industry? What external and internal factors speed up or slow down growth? Qualitative data take the form of verbal statements and textual records about the attributes and quality of the phenomenon under investigation. Answers were handwritten on the spot during the interview and then formally edited without changing the content. The interview lasted an hour and a half to two hours. During the interview, the researchers provided clarification on request if the questions were not completely clear. Qualitative research of the researched topic in a larger

sample is rare, it is mostly carried out in the form of case studies in the scope of up to ten companies.

Data analysis. Qualitative statements were analyzed using critical discourse analysis (CDA) to better understand the accelerators and decelerators of scaleup growth. CDA (van Dijk, 2015; Qian et al., 2018; Liu and Guoo, 2016) provides a unique tool for decomposing language/speech and communication in business contexts and enables deeper penetration into the nature of accelerators and decelerators. The choice of CDA as a methodological tool is motivated by its proven effectiveness in investigating the opaque relationships that are at the core of complex social phenomena (Fairclough, 1995; Wodak et Meyer, 2009). According to Fairclough (2003), CDA is considered to be an interdisciplinary tool that uses spoken, written, and in addition, language visualized through images to interpret a phenomenon in depth.

Qualitative analysis is sometimes criticized for subjectivity, which is, however, suppressed by systematic penetration into the essence of the collected qualitative data, e.g. the CDA method, and the ability to reveal unsuspected new knowledge in the sense of grounded theory (Makri et Neely, 2021), because it usually works without explicit hypotheses, thought templates and prejudices.

Critical discourse analysis can have a different number of steps, e.g. Mullet (2018) formulates seven steps, Luo (2023) four steps, and Cingerová and Motyková (2017) offer seven basic steps according to the Duisburg school. Qualitative data analysis software (Maxqda, 2024) offers CDA in four steps. The differences in the number of steps are not fundamental, some steps are just merged. CDA in this study consists of four main steps:

1. **Reading and recording first impressions**: Initial reading of texts leads to recording first impressions, questions, and assumptions about content and structure.
2. **Text Coding**: Using open coding with manual highlighting and subsequent re-coding using ChatGPT-4 artificial intelligence, key concepts, ideas, and themes in the responses were identified and labeled.
3. **Thematic analysis**: Similar codes were collected into broader themes or categories. The subject of observation was how these themes overlap, repeat, or contrast in different texts or parts of the text.
4. **Identifying patterns**: The themes isolated in the previous step were analyzed for their distribution in the text and then any recurring patterns or structures that indicated important aspects of the discourse were identified.

The identified patterns are A. types of products/services that indirectly integrate companies into the industry, B. evidence of originality of products/services that confirm their novelty, C. main themes of commercialization of the results of the development of new products/services, D. growth prospects of the industry, and E. growth accelerators and decelerators of the examined scaleups, which were identified in the internal and external environment of the investigated enterprises. The order of the identified patterns expresses their importance/weight in the research sample.

The interpretive phase of critical discourse analysis (CDA) is a key part of the analysis process, as it is devoted to a deeper understanding and interpretation of the discursive practices and patterns identified in the descriptive phase. This phase moves from a basic identification of discursive elements to an analysis of how these elements interact with the wider social, cultural, and historical contexts in which they are embedded.

This procedure allows researchers to uncover the hidden meanings that shape and are shaped by discourse.

The ChatGPT-4 language model developed by OpenAI (2024) is an advanced text analysis tool that uses deep learning to understand and interpret human speech. In the described research, this model was used to identify patterns and verify the results of analyses.

4. Findings

The formal sectoral inclusion of the investigated enterprises is not always a clear proof of the type of business the enterprise is really in, or what needs it satisfies. The discursive analysis identified several groups of enterprises according to the type of **products/services and value offered**. The order of occurrence expresses their importance/weight in the research sample and the intentions of the founders when choosing the mission of the company.

1. Information technology and software solutions. Enterprises provide software solutions for industrial automation, virtual reality, and digital marketing. They offer innovative tools for automating and personalizing production and operational processes through artificial intelligence and machine learning. (J)
2. Research and development in natural and technical sciences. Engineering activities and consulting. Technical testing and analysis. (M)
3. Electronic commerce and digital marketing. E-commerce services help increase website efficiency and optimize marketing campaigns to increase conversions. (G - with emphasis on electronic commerce)
4. Industrial production. Production of engineering and electronic components. (C)
5. Others. Administrative services, financial services, construction, real estate, education, and entertainment.

The investigated companies demonstrate the novelty of their products/services in different ways, which differentiates them from their competitors. Novelty is a possible source of competitive advantage and business growth. The order of **evidences that confirms novelty** expresses its importance/weight in the research sample.

1. Innovations and technological advantages. Novelty is justified by an innovative product/service or an exceptional technical feature of a product that is unique because it has no direct competition in the country
2. Unique attributes and special functions. Novelty is justified by the unique attributes or features of the product/service that differentiate it from the competition. Customers value features that they did not find in other products or were available at a very high price.
3. Certificates and awards. Enterprises have received international certifications or awards for their products or services, which confirm their quality and innovativeness. On their websites, companies list the results achieved in independent international competitions and case studies of successfully implemented projects.
4. Cooperation with important personalities or institutions. Evidence of novelty or rather exceptionality are the statements of personalities and statements of institutions. They express e.g. successful and well-known sportsmen, consumer associations, state agencies, mass media experts, and the like.

Product commercialization includes activities whose purpose is to transform an idea into a product and get the finished product to the final customer/consumer. The order of **the main themes of commercialization** expresses their importance/weight in the research sample.

1. Direct distribution and personalization of the product. Distribution without intermediaries is the most serious topic of commercialization. The company wants to independently control the entire distribution process and have a direct influence on the end customer, so that the quality of delivery and use of the product, which must often be adapted to the needs of a specific customer, is not compromised.
2. Selection of key markets and development of relationships with customers. Choosing the right markets and maintaining relationships with customers in those markets are important for companies whose growth requires a large base of loyal customers, which can only happen in well-targeted markets.
3. Flexible pricing and services. Flexible pricing and adaptation to specific market requirements are essential for a business that takes place in markets with high variability in the quantity and quality of demand, e.g. in accommodation and catering services.
4. Intense competition and differentiation. Only after entering the market, companies fully experience and realize the strength of competitors and customer demands, and therefore additionally and continuously try to improve and differentiate their products. They increase the quality, innovativeness, and uniqueness of product attributes.

The growth prospects of the industry are objective and, as a rule, independent of the entrepreneur, the conditions and circumstances of growth. However, the following overview shows that entrepreneurs realize their ambitions, dreams, ideas, and plans, at least at the beginning of their business, mostly without examining the growth prospects of the industry and, replacing them with various partial observations of the external environment and personal reasons. Based on the discursive analysis, they can be classified into categories, the order of which expresses their importance/weight in the research sample.

1. Desire to do something of your own. These entrepreneurs set up their own companies to be independent, to realize themselves, and bring new solutions or products to the market.
2. Identification of the market gap. Some entrepreneurs have noticed that there is a gap or an unmet need in the market that their product or service can effectively fill or satisfy.
3. Implementation of academic research results. In some cases, the business idea arose from research or work carried out at a university or other academic setting.
3. Bad ecological situation. Some entrepreneurs saw a business opportunity to improve the ecological situation or contribute to environmental sustainability.
4. Use of personal experience and skills. Entering a business was an opportunity to use previous experience, knowledge, and skills to create something of value.
5. Opportunity for innovation. The desire to bring innovative solutions or technologies to the market was another important motive for many entrepreneurs.
6. Improving the quality of life or health. These companies develop products and services that have the potential to improve people's quality of life or health.

External growth accelerators are factors that are located in the external environment of the company and can favorably support the growth of the company if they

are correctly identified and used. Five external growth accelerators and their causes were identified, which are ranked according to importance/weight in the research sample.

1. Growth in demand. The growing interest of customers in the company's products or services leads to an increase in sales and profits. The reasons for the increase in demand are the creation or discovery of new markets, the growth of awareness and interest in certain products and services, and the growing demands of customers for the improvement and innovation of products/services.
2. Economic growth provides favorable conditions for expansion, brings business opportunities for most companies regardless of industry, reduces uncertainties and risks, and thus encourages innovation and investment. The causes of economic growth are a predictable and especially stable macroeconomic environment, stable and predictable regulations, and availability of capital, logistics, and distribution infrastructure.
3. Extraordinary opportunities appear suddenly and without previous strong and promising signals, they are extraordinary opportunities that come from another industry or exist unnoticed on the fringes of one's own industry or in an inconspicuous market segment. The causes of these opportunities are potentially unique and innovative products/services, applications of advanced technologies, transfer of highly specialized knowledge and experience to inventions and innovations, and improvement of quality and reliability of existing products/services.
4. Exceptional threats are disruptions, unpredictable events, and crises that can prompt companies to innovate and adapt, leading to their growth. Disruptions often result in the search for new opportunities, process optimization, and reorganization that can spur company growth. Companies that can properly react to stressful or crisis situations can turn them into opportunities. The causes of these threats are the unexpected appearance of new competitors, poor customer response, cancellation of orders from large customers, failure of suppliers, lack of specialists, and loss of favor of investors.
5. Technical progress brings revolutionary changes. New generations of products/services are coming, new production processes, better communication, entry into new markets, and established and proven procedures and solutions are becoming obsolete. The causes of progress are the constant advancement of human knowledge, which is transferred to the emergence of new technologies, automation, digitization, and big data.

External growth decelerators are factors that are located in the external environment of the company and slow down the growth of the company. If they are correctly identified, the company can avoid them, minimize their impact, or overcome them.

1. Intense competition limits company growth because it lowers prices, and increases demands for quality, constant innovation, and advertising costs. Strong competition is caused by larger and older competitors who have more resources, a larger market share, a well-known brand, and loyal customers, and may even be encouraged to innovate more.
2. Macroeconomic uncertainty causes consumer and investor restraint and a drop in demand. The causes are inflation, recession, and political instability, which negatively affect the procurement of external sources of financing and investment in company development. Another reason is fluctuating consumer confidence, which adversely affects purchasing behavior.

3. Strict regulations. Strict and complex regulations hinder company growth because they increase compliance costs and slow down innovation processes. Rules relating to consumer protection, the environment, working conditions, and safety are difficult to comply with and require significant legal and administrative support costs. Non-compliance results in sanctions and reputational damage.
4. The bargaining power of large customers and suppliers is reflected in lower sales and higher purchase prices. Dependence on a small number of customers and suppliers leads to other disadvantageous conditions when buying and selling, e.g. short terms for sales, long terms for purchase, unreasonable demands on quality and assortment, and frequent changes in business conditions.
5. Rapid technical progress, which is slowly applied, leads to falling behind the competition, which is more active in the application of modern technologies. Failure to keep up with rapid technological progress results in technological backwardness. Rapid technical progress manifests itself as a constant stream of innovation, but it is costly, requires high expertise and skills, and quick adaptation to short innovation cycles.

Internal growth accelerators are factors that are located inside the company and positively affect its growth. Their creation, maintenance, and strengthening are the result of internal decisions, but it is not excluded that they are partly influenced by external circumstances. The order of the factors expresses their importance/weight in the research sample.
1. Capable management can pool resources and use them correctly to achieve the goal. The management in the investigated companies was able to motivate employees and lead work teams, draw up plans with well-chosen goals, make quick and informed decisions based on data, and, finally, effectively solve problems and find creative solutions.
2. Quality team. Teamwork and cooperation between employees led to better results and faster achievement of goals. High-quality employees brought expertise, a sense of cooperation, work commitment, and innovative ideas to the company.
3. Internal research and development is the main source of invention, innovation, and continuous improvement of products and services and contributes to the faster introduction of innovations to the market. The reasons for high-quality internal R&D are the strengthening of creativity and creativity in the team, constant monitoring and implementation of new technologies, partnerships with universities and research institutes, and rapid adaptation and implementation of research results.
4. Optimum use of resources reduces costs, increases efficiency, maximizes profitability, and allows the enterprise to respond to market changes and opportunities with greater flexibility and speed. Inventory, human resources, and technology are optimized to minimize costs and maximize returns.
5. An innovative corporate culture supports innovation and creativity and is therefore an important factor in business growth. It motivates employees to look for new and better work methods, develop new products and services, and constantly improve existing processes. The causes of innovative culture are the support of creative thinking, open and transparent communication, encouragement to try new things without fear of failure, and constant adaptation to changes and new trends.

Internal growth decelerators prevent companies from growing from within. They are the result of incorrect internal decisions, but in the case of the investigated

companies, also the consequence of young age and naturally small size. The order of the factors expresses their importance/weight in the research sample.

1. The lack of employees in specific professions significantly limits the growth of the company, because there is a lack of special knowledge and skills necessary for the growth of the company, which cannot be supplemented by regular education and training. In addition to upgrading less capable employees, it is necessary to attract and retain talented employees.
2. High costs of development, normal operation, wages, and marketing significantly reduce profit. Companies are looking for ways to reduce costs without negatively affecting the quality of products or services. The reasons are the high prices of inputs that are purchased in relatively small quantities, the small bargaining power of a small company, the limited possibilities of optimizing resources in a small company, and little experience and professionalism in cost management.
3. Lack of funds limits the company's investment in growth and development. Without sufficient capital, it is impossible to expand production, innovate and improve marketing. Financial uncertainty also affects a company's ability to attract and retain talented employees. The reasons for this state are low bargaining power in relation to capital providers, short history, insufficient property guarantees, and unattractive or unconvincing products for risk investors.
4. Limited resources have a financial, human, material, and technological nature. Lack of resources slows development, and production, reduces product quality, and weakens response to market opportunities. The reasons for this situation are similar to the lack of funds.
5. Inadequate internal communication results in inefficient use of resources, work errors, and low employee morale. Without clear and effective communication, goals are poorly understood and poorly achieved. The causes of poor communication are closed teams, disengaged and demotivated employees, incorrect and delayed information, and the absence of a formal communication network.

The result of the analysis of answers to open questions about accelerators and decelerators of scaleup growth is summarized in tab. 1.

Tab. 1. Summary overview of scaleups' growth accelerators and decelerators

		Accelerators vs Decelerators	
		↑ max Accelerators and their influence ↓ min	↑ max Decelerators and their influence ↓ min
External factors vs Internal factors	External factors	1. Growth in demand 2. Economic growth 3. Extraordinary opportunities 4. Exceptional threats 5. Technical progress	1. Intense competition 2. Macroeconomic uncertainty 3. Strict regulations 4. Bargaining power of large customers and suppliers 5. Rapid technical progress
	Internal factors	1. Capable management 2. Quality team 3. Internal research and development 4. Optimum use of resources 5. Innovative company culture	1. Lack of employees in a specific profession 2. High costs 3. Lack of funds 4. Limited resources 5. Inadequate internal communication

5. Discussion

In the background of the evaluation and interpretation of the research results, it should be taken into account that the object of the research is a start-up in an advanced stage of development, which is in a state of growth after overcoming initial existential difficulties/shortcomings/limitations/doubts, and becomes a scaleup. It is still a small company with limited, incomplete resources of varying quality and quantity. As a result of growth, this company is entering new contexts, and new, higher demands are placed on it. From an insignificant, invisible start-up, it becomes a relatively well-known, small, ambitious company that the competition begins to notice.

** The choice of industry determines the growth prospects of scaleups. Sectors J (Information and communication) and M (Professional, scientific, and technical activities) attract significantly more scaleups than other sectors.*

Scaleups consider growth prospects and opportunities through industry selection. They prefer new (growing) industries to old (mature) industries. According to SK NACE, scaleups in the research area are most present in sectors J, M, G, C, and N (order according to the number of scaleups in the research sample). According to the European Scaleup Monitor 2024, they are mostly found in the sectors J, N, M, F, and K (in order from the largest to the smallest occurrence of scaleups). According to the results of the qualitative analysis, they are most present in the sectors J, M, and G (ranking from the largest to the smallest occurrence of scaleups). The intersection of the mentioned orders are the sectors J (Information and communication) and M (Professional, scientific, and technical activities), which make up two-thirds of the research sample. These industries are dynamic and prospective, based mainly on intangible assets of a software nature, and therefore

provide suitable conditions for scaling (Sullivan, 2016). The tendency of scaleups towards IT and digitization is also confirmed by Adner et al. (2019).

In addition to opportunities, the growth industry also brings risks, e.g. lower productivity and worse financial health of high-growth businesses (Dillen et Vandekerkhof, 2021). Smaller barriers to mobility, exits of firms and technological opportunities measured by the intensity of digitization, and to a lesser extent agglomeration effects are associated with a larger share of fast-growing firms (Friesenbichler et Hölzl, 2020). Of the 68 scale-ups in the report of Amsterdam City Region (van Winden et al., 2020) are 15% scale-ups are in enterprise software, 10% scale-ups in transportation 9% scale-ups in fintech. Other industry types include real estate, job recruitment, telecom, semiconductors, security, renewables & environment, education, activities, legal, kids, music, home living, gaming, financial services, fashion, and biotechnology.

** Evidences of the novelty of products and services are informal. Novelty is confirmed by market and social response. Novelty is attractive to venture capitalists and acquirers, thus stimulating growth.*

Scaleups do not have complex systems for evaluating the novelty of products and services, statements about the novelty of products and services are subjectively distorted. Evidences of novelty significantly limit the scope for subjectivity and bias and can therefore be a substitute or indirect expression of novelty. The evidence is significantly informal, or they do not have the form of official documents, it is mainly the uniqueness of the product at the country level, the uniqueness as perceived by customers or socially respected persons, and the uniqueness confirmed by the absence of obvious competition. Evidence of novelty is also the willingness of customers to pay for the novelty (Zhang et al., 2020). Customers are keenly aware of product innovation and added value. Formal proof of novelty is usually very expensive for scaleups, and they resort to it only if protection is necessary in the case of a new, expensively developed technology, e.g. technological scaleup Glycanostics states that the cost of one patent is 300 thousand. euros (primar.sme.sk, 2024) and currently has five patent applications filed. Formal/legal protection is expensive, so scaleups rely on various awards and certificates without legal protection. Even informal evidence of novelty has a market and social response, strengthens brand awareness, and promotes growth. Formal evidence instills confidence in venture investors and substantially increases the chances of acquisitions by large and mature companies. New companies/scaleups rely on being more innovative/original than old companies (Callender et Matouschek, 2021) and therefore have greater growth potential.

** The main theme of commercialization is entrepreneurial independence, which is, however, confronted with intense competition. Competition limits the desire for growth.*

The prevailing theme of commercialization is the independence of actions in distribution, the selection of markets, and pricing in the interest of customer satisfaction, which, however, ultimately runs into relentless competition. The unspoken topic is the speed of commercialization and getting ahead of the competition. Independence is the founding motive for entering a business, but an excessive desire for independence can distort an objective assessment of the competitive situation in the market. Subjective interests (growth) are confronted with the objective situation in the market (intense competition). The accompanying theme of commercialization is the perfect knowledge of

the customer's needs, which occurs only at the moment of sale, and therefore scaleups try to avoid failure due to the customer's ignorance (Malec et al., 2020).

** Objective analysis of growth prospects is substituted by the subjective ideas and ambitions of the founders.*

Founders are preoccupied with their ideas about the business and therefore lack a comprehensive view of the industry. Personal ambitions, self-realization, and sometimes social responsibility dominate over an objective and rational assessment of the industry's growth possibilities. The effort to change the world is contrary to the superficial/assumed knowledge of this world. Many founders take world knowledge for granted so much that they don't even bother with it. They project their ideas about a business into the growth prospects of the industry. In the gap between discovery and creation (Ghezzi (2019) they create and improvise more than analyze and discover.

** Accelerators and decelerators of growth are related to each other and influence each other (tab. 2).*

A. growth in demand reduces the intensity of competition and the bargaining power of large customers and suppliers. B. economic growth reduces macroeconomic uncertainty. C. economic growth makes strict regulations more tolerable or motivates scaleups to solve them. D. technical progress that brings opportunities can turn into too rapid technical progress that brings threats. E. capable management can eliminate unskilled employees to some extent. F. a quality team can eliminate unqualified employees to some extent. G. internal R&D is weakened by high costs and lack of funding. H. the optimal use of resources is weakened by the lack or incompleteness of resources. I. innovative culture can eliminate communication deficiencies to a certain extent. Identified relationships also work in reverse order with reversed consequences. Exceptional opportunities and threats are disturbances that occur in the pursuit of high growth and arise without obvious connections, unexpectedly, and their consequences are controversial, both favorable and unfavorable.

Table 2. Connections between the identified factors of acceleration and deceleration of scaleup growth

External growth accelerators	**External growth decelerators**
1. Growth in demand **A.**	1. Intense competition
2. Economic growth **B.**	2. Macroeconomic uncertainty
3. Extraordinary opportunities **C.**	3. Strict regulations
4. Exceptional threats	4. Bargaining power of large customers and suppliers
5. Technical progress **D.**	5. Rapid technical progress
Internal growth accelerators	**Internal growth decelerators**
1. Capable management **E.**	1. Lack of employees in a specific profession
2. Quality team **F.**	2. High costs
3. Internal research and development **G.**	3. Lack of funds
4. Optimum use of resources **H.**	4. Limited resources
5. Innovative company culture **I.**	5. Inadequate internal communication

** External and internal growth accelerators and decelerators signal opportunities, threats, strengths, and weaknesses of scaleups.*

Growth is accelerated and slowed down by external and internal factors that are standard and specific. Standard factors encourage and retard all companies, but the implications for scaleups can be different. They are more encouraging because scaleups are flexible and ambitious, and more retarding because scaleups are small companies with very limited resources. Specific factors affect and influence scaleups in particular, but their impact on ordinary companies is not excluded. External standard factors have more weight than specific factors, but the growth of scaleups is influenced by a whole range of factors. The strategic connections between growth accelerators and decelerators are shown in the Tab. 3.

Table 3. Strategic contexts of scaleup growth accelerators and decelerators

External growth accelerators The emergence or creation of an opportunity!	**External growth decelerators** Overcome and neutralize threats!
Internal growth accelerators Maintain and strengthen strengths!	**Internal growth decelerators** Weaken influence to remove weaknesses!

In the background of all potential strategies (Tab. 3) is finding external space for growth and overcoming internal resource deficiencies in the following order:

1. the choice of a prospective industry with high growth potential and minimal competition.
2. obtaining financial resources from strong venture investors with professional knowledge of the relevant industry.
3. creating networks, partnerships, alliances, joint ventures to overcome resource constraints of all kinds.
4. active acquisitions of smaller partners/competitors.
5. passive acquisition by larger and more experienced companies.

External growth accelerators encourage the emergence of opportunities that can be observed or created. A real contribution to the growth of the scaleup are only opportunities used, which are purposefully chosen and realized with the help of procurement and activation of resources. Standard/general factors are demand growth and economic growth. Demand for scaleup in a small country often has an international dimension (Tippmann et al., 2023). Non-standard/specific factors are exceptional opportunities, exceptional threats, and technical progress, respectively open innovation (OI). Scaleups should recognize unexpected phenomena and events and especially seize non-standard business opportunities.

External growth decelerators are objective threats or consequences of wrong decisions. Scaleups should overcome or neutralize the threat, and avoid or eliminate the threat. Scaleup growth will not be affected by threats if it is possible to significantly reduce their impact. Standard factors are competition, uncertainty, and regulations. Uncertainty is an ambivalent phenomenon, and therefore a threat can turn into an opportunity (Gulati,

2023). Specific factors are the bargaining power of larger market participants and rapid technical progress.

Internal growth accelerators are the strengths of the scaleup, which make it possible to seize opportunities and neutralize threats, in which case they really contribute to the growth of the company. Standard factors are capable management, quality team, and optimal use of resources. Specific factors are internal R&D (according to Balse et Leinwand (2024) it is the constant renewal of knowledge) and an innovative company culture.

Internal growth decelerators are the weak points of a scaleup. Removing weaknesses is difficult to impossible, the most common solution consists in forming various alliances and partnerships and substituting missing resources. All factors are specific and are linked by the lack of all resources (specialists, finance, communication, and others) combined with high costs. The identified inhibitors nicely complement the internal barriers to growth by Soleimani et al. (2023). A special group of internal decelerators consists of deficiencies in internal communication. Solving these problems is key to improving organizational efficiency and employee satisfaction. Different perceptions of corporate culture by managers and employees also cause communication problems (Strengers et al., 2022). Managers promote a hierarchical culture, but employees value a culture of clan and adhocracy, which is positively correlated with scaleup performance. Scaling is negatively associated with employee burnout and positively with employee job satisfaction (Genedi et al., 2024), and this is another reason for binding or improving communication. Communication will probably improve not only due to the correct use of communication techniques, but also due to the removal of deeper causes of reluctance to communicate.

6. Conclusions

The result of the research is the identification of accompanying or supporting circumstances of scaleup growth and explicitly acting factors. Favorable conditions for the growth of scaleups are the choice of a suitable industry, proven novelty/originality of the product/service, business independence in the process of commercializing new products/services, and the ambitions of the founders. External growth accelerators are demand, economic growth, exceptional opportunities, exceptional threats, and technological progress. External growth decelerators are competition, uncertainty, regulations, bargaining power of larger market participants, and rapid technological progress. Internal growth accelerators are capable management, a quality team, optimal use of resources, internal R&D, and an innovative corporate culture. Internal growth decelerators are missing specialists, high costs, lack of funds, limited resources, and insufficient internal communication. Existing researches provide various incomplete lists of scaleup growth factors without ranking them according to importance and without sorting them into unambiguous groups.

The research question was answered because the factors and circumstances encouraging or inhibiting the development of scaleups were identified and at the same time the research objective was met and the research gap was filled because the factors and circumstances are arranged in ordinal order according to their weight/importance.

The result of the research is an original contribution to the deepening and expansion of knowledge about the viability of scaleups and a better understanding of the factors and circumstances that support or weaken their growth.

A challenge for further research is to identify groups of scaleups that have different growth dynamics and investigate the reasons for these differences. Another challenge for further research is to identify the influence of soft growth factors (founder's growth ambitions, founder's leadership, team leadership and team cooperation) and of the hard growth factors, it is mainly commercialization, since exponential growth is expected from the scaleup after entering the market.

The research results also have practical implications and use. They provide a clear and ordered list of factors according to importance/weight that can be exploited (external accelerators) or neutralized (external decelerators), and improved (internal accelerators) or removed (internal decelerators). Respecting accompanying or growth-supporting circumstances increases the probability of starting and maintaining growth. The factors and circumstances of growth are the result of empirical research and should therefore be accepted with confidence by practicing entrepreneurs.

The research limits are the sample size, which cannot be scaled up too much because the number of scaleups in the country is relatively small. A relatively small research sample size can also be an advantage because the research can be repeated and then confirm or refute some findings that are dependent on conditions changing over time. Field research carried out in a direct interview with the founder is demanding for obtaining consent for a guided interview and for the work schedule of the researcher and the respondent. The research limit is also the restricted time for an interview and the depth of penetration into the researched topic, which, however, can be partially compensated by the analysis of publicly accessible documents about the relevant company.

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References

Adner, R., Puranam, P., & Zhu, F. (2019). What is different about digital strategy? From quantitative to qualitative change. *Strategy Science*, *4*(4), 253–261, https://doi.org/10.1287/stsc.2019.0099.

Bamakan, S.M.H., Nezhadsistani, N., Bodaghi, O., & al. (2022). Patents and intellectual property assets as non-fungible tokens; key technologies and challenges. *Sci Rep. 12*, 217, https://doi.org/10.1038/s41598-022-05920-6.

Blase, P., & Leinwand, P. (2024). Create a system to grow consistently. *Harvard Business Review*, March-April, 2024, https://hbr.org/2024/03/create-a-system-to-grow-consistently.

Bonnín Roca, J., Vaishnav, P., Morgan, M. G., Mendonça, J., & Fuchs, E. (2017). When risks cannot be seen: Regulating uncertainty in emerging technologies. *Research Policy*, *46*(7), 1215–1233. https://doi.org/10.1016/j.respol.2017.05.010.

Brown, R., & Mason, S. (2019). Entrepreneurial Ecosystems and Public Policy in Action: A Critique of the Latest Industrial Policy Blockbuster. *Cambridge Journal of Regions Economy and Society, 12*(3), 347-368, https://doi.org/10.1093/cjres/rsz011.

Budi, A. A., & Aldianto, L. (2020).. Research and Development – Commercialization Bridge: A Refined Model. *The Asian Journal of Technology Management*, *13*(1), 47-62, https://doi.org/10.12695/ajtm.2020.13.1.4.

Burger, A., Hogan, T., Kotnik, P., Rao, S., & Sakinç, M. E. (2023). Does acquisition lead to the growth of high-tech scale-ups? Evidence from Europe. *Research in International Business and Finance, 64,* https://doi.org/10.1016/j.ribaf.2022.101820.

Callander, S., & Matouschek, N. (2021). The Novelty of Innovation: Competition, Disruption, and Antitrust Policy. *Management Science*, *68*(1), https://doi.org/10.1287/mnsc.2021.41.

Carrick, J. (2023). Navigating the Path from Innovation to Commercialization: A Review of Technology-Based Academic Entrepreneurship. *Journal of Applied Business Research*, *39*(1), 1-14. https://journals.klalliance.org/index.php/JABR/article/view/223

Cattaneo, L., Polenghi, A., & Macchi, M. (2021). A framework to integrate novelty detection and remaining useful life prediction in Industry 4.0-based manufacturing systems. *International Journal of Computer Integrated Manufacturing*, *35*(4–5), 388-408. https://doi.org/10.1080/0951192X.2021.1885062

Cingerová N., & Motyková K. (2017). *Úvod do diskurznej analýzy / Introduction to discourse analysis. University textbook*. Comenius University in Bratislava. https://fphil.uniba.sk/fileadmin/fif/katedry_pracoviska/krvs/ZS_2018_2019/Uvod_do_diskurznej_analyzy.pdf.

Coad, A., Bornhäll, A., Daunfeldt, S. O., & McKelvie, A. (2024). Eight Propositions About Scale-ups. *Scale-ups and High-Growth Firms: Theory, Definitions, and Measurement*, 19-30. Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-97-1379-0.

Collis, D. J. (2021). Why do so many strategies fail? *Harvard Business Review*, July-August, 2021. https://hbr.org/2021/07/why-do-so-many-strategies-fail.

Čapliar, M., & Melková, M. (2018). Analysis of Initiatives to Support Scale-ups as Tool to Enhance EU´s Competitiveness. International Conference on European Integration Ostrava, Czech Republic. https://is.muni.cz/repo/1459476/ICEI-2018_Proceedings.pdf#page=209.

Dabrowski, D. (2022). The Impact of a New Product's Novelty and Meaningfulness on its Commercial Performance. *IBIMA Business Review*, *Vol. 2022*, Article ID 998442, https://doi.org/10.5171/2022.998442.

van Dijk, T. A. (2015). Critical Discourse Analysis. In: *The Handbook of Discourse Analysis*. Second Edition. Edited by Deborah Tannen, Heidi E. Hamilton, and Deborah Schiffrin. Volume I, Wiley Blackwell, https://onlinelibrary.wiley.com/doi/book/10.1002/9781118584194.

Dillen, Y., & Vandekerkhof, P. (2021) Does the sector matter? An analysis of high-growth firms and industry growth rates, *Journal of Small Business and Enterprise Development*, *28*(6), 927-945, https://doi.org/10.1108/JSBED-02-2020-0053.

Duruflé, G., Hellmann, T., & Wilson, K. (2017). From Start-up to Scale-up: Examining Public Policies for the Financing of High-Growth Ventures. *Saïd Business School Research Papers*, https://www.bruegel.org/sites/default/files/private/wp_attachments/WP-2017_04.pdf.

Eisenmann, T. (2021). Why start-ups fail. *Harvard Business Review*, May-June, 2021. https://hbr.org/2021/05/why-start-ups-fail.

Fairclough, N. (1995). *Critical discourse analysis*. Longman.

Fairclough, N. (2003). *Analysing discourse: textual analysis for social research*. New York, Routledge.

Friesenbichler, K., & Hölzl, W. (2020). High-growth firm shares in Austrian regions: the role of economic structures. *Regional Studies*, *54*(11), 1585–1595, https://doi.org/10.1080/00343404.2020.1742316.

Garcia-Tapial, Joaquín, & Cardenete, Manuel Alejandro (2023). Start-Up or Scale-Up? An Approach through Economic Impact. *Journal of Management for Global Sustainability*, *8*(1), 155-196, https://archium.ateneo.edu/jmgs/vol8/iss1/10.

Genedy, M., Hellerstedt, K., Naldi, L., & Wiklund, J. (2024). Growing pains in scale-ups: How scaling affects new venture employee burnout and job satisfaction, *Journal of Business Venturing*, *39*(2), 10637, https://doi.org/10.1016/j.jbusvent.2023.106367.

Ghezzi, A. (2019). Digital Startups and the adoption and implementation of Lean Start-up Approaches: Effectuation, Bricolage and Opportunity Creation in Practice. *Technological Forecasting and Social Change*, *146*, 945-960, https://doi.org/10.1016/j.techfore.2018.09.017.

Gibson, J. A., & Bhattacharya, A. (2023). *Full scale. How to ensure more British firms grow to their potential.* The Social Market Foundation, London, https://www.smf.co.uk/wp-content/uploads/2023/09/Full-Scale-September-2023.pdf.

Gulati, R. (2023). Investing in growth through uncertainty. *Harvard Business Review*, July-August, 2023. https://hbr.org/2023/07/investing-in-growth-through-uncertainty

Harnish, V. (2014). *Scaling up. Mastering the Rockefeller Habits.* Gazelles, https://scalingup.com/.
Haessler, P., Giones, F., & Brem, A. (2023). The who and how of commercializing emerging technologies: A technology-focused review. *Technovation*, *121*, 102637. https://doi.org/10.1016/j.technovation.2022.102637.
Hsieh, W. L., Ganotakis, P., Kafouros, M., & Wang, C. (2018). Foreign and domestic collaboration, product innovation novelty, and firm growth. *Journal of Product Innovation Management*, *35*(4), 652-672, https://doi.org/10.1111/jpim.1243.
Churchill, N. C., & Mullins, J. W. (2001). How fast can your company afford to grow? (2001) *Harvard Business Review*, May, 2001. https://hbr.org/2001/05/how-fast-can-your-company-afford-to-grow.
Jagtap, S. (2016). Assessing design creativity: Refinements to the novelty assessment method. International design conference - DESIGN 2016, Dubrovnik - Croatia, May 16 - 19, 2016. https://www.designsociety.org/publication/38915/ASSESSING+DESIGN+CREATIVITY%3A+REFINEMENTS+TO+THE+NOVELTY+ASSESSMENT+METHOD
Liu, K., & Guo, F. (2016). A Review on Critical Discourse Analysis. *Theory and Practice in Language Studies, 6*(5), 1076-1084. DOI: http:// doi.org/10.17507/tpls.0605.23.
Luo, A. (2023). Critical Discourse Analysis. Definition, Guide & Examples. Published on August 23, 2019, revised on June 22, 2023. https://www.scribbr.com/methodology/discourse-analysis/.
Makri, C., & Neely, A. (2021). Grounded Theory: A Guide for Exploratory Studies in Management Research. *International Journal of Qualitative Methods*, *20*. https://doi.org/10.1177/16094069211013654.
Malec, M., Stańczak, L., & Ricketts, B. (2020). Integrated Commercialization Model of Research and Development Project Results. *Management Systems in Production Engineering. 28*(4), 228-239. https://doi.org/10.2478/mspe-2020-0033.
Mason, C. (2018). Productivity and the UK's Deficiency in Scale-ups. Evidence Review. PIN 05. www.productivityinsightsnetwork.co.uk.
Maxqda (2024). https://www.maxqda.com/research-guides/discourse-analysis
Mazzarol, T., & Reboud, S. (2020). *Entrepreneurship and Innovation. Theory, Practice and Context*. Fourth Edition, Springer Nature Singapore. https://doi.org/10.1007/978-981-13-9412-6.
Min, J-W., Kim, YJ., & Vonortas, N. S. (2020). Public technology transfer, commercialization, and business growth. *European Economic Review*, Elsevier, *124*(C). https://doi.org/10.1016/j.euroecorev.2020.103407.
Monteiro, G. F. A. (2019). High-growth firms and scale-ups: a review and research agenda. *RAUSP Management Journal*, *54*(1), 96-111. https://doi.org/10.1108/RAUSP-03-2018-0004.
Mullet, D. R. (2018). A General Critical Discourse Analysis Framework for Educational Research. *Journal of Advanced Academics*, *29*(2), 116–142. https://doi.org/10.1177/1932202X18758260.
Mühlroth, C., & Grottke, M. (2022). Artificial Intelligence in Innovation: How to Spot Emerging Trends and Technologies, *IEEE Transactions on Engineering Management*, *69*(2), 493-510. doi: 10.1109/TEM.2020.2989214.
Myers, A., & Albats, E. (2024). The Challenges and Strategic Solutions of Emerging Technology Entrepreneurship: A Systematic Literature Review. *Proceedings of the 57th Hawaii International Conference on System Sciences*. starting page 5439. https://hdl.handle.net/10125/107038.
Nenonen, S., & Storbacka, K. (2020). Don't adapt, shape! Use the crisis to shape your minimum viable system – And the wider market. *Industrial Marketing Management*, *88*, 265-271, https://doi.org/10.1016/j.indmarman.2020.05.022.
Nordic Scalers (2017). http://nordicscalers.io/2017/.
OpenAI (2024). https://openai.com/chatgpt.
Pisano, G. P. (2024). How fast should your company really grow? *Harvard Business Review*, March-April, 2024, https://hbr.org/2024/03/how-fast-should-your-company-really-grow.
primar.sme.sk (2024). Slovenskí vedci vyvinuli revolučný test: Chceme svet, v ktorom vieme rýchlo odhaliť rakovinu. / Slovak scientists have developed a revolutionary test: We want a world in which we can detect cancer quickly. https://primar.sme.sk/c/23327549/rakovinu-vedia-odhalit-vdaka-testu.html, 9. May 2024.
Qian, J., Wei, J., & Law, R. (2018). Review of critical discourse analysis in tourism studies. *Int J Tourism Res*, *20*(4), 526–537. https://doi.org/10.1002/jtr.2202.

Rannikko, H., Buffart, M., Isaksson, A., Löfsten, H., & Tornikoski, E.T. (2022). Mobilizing finance and achieving early growth in new technology-based firms: a legitimacy perspective. *International Journal of Entrepreneurial Behaviour & Research*, *28*(6), 1532-1555. https://doi.org/10.1108/.

Rayport, J. F., Sola, D., & Kupp, M. (2023). The overlooked key to a successful scale-up. *Harvard Business Review*, January-February, 2023. https://hbr.org/2023/01/the-overlooked-key-to-a-successful-scale-up.

Slávik, Š., & al. (2020). Metamorfózy startupov na ceste za podnikateľským úspechom. Recenzovaný zborník prípadových štúdií. / Metamorphoses of start-ups on the way to business success. Peer-reviewed collection of case studies. Publishing house EKONÓM, Bratislava 2020, ISBN 978-80-225-4767-3.

Soleimani, M., Rezaee, B., Naderi, N., & Mohammadifar, Y. (2023). Interpretive structural clarification of Transitional barriers from Start-up to Scale-up. *Journal of Entrepreneurship Development*, *16*(3), 66-85, DOI: https://doi.org/10.22059/JED.2023.359963.654205.

Storey, D. J., & Greene, F. (2010). *Small Business and Entrepreneurship*. Harlow, Prentice Hall.

Strengers, J., Mutsaers, L., van Rossum, L., & Graamans, E. (2022) The organizational culture of scale-ups and performance, *Journal of Organizational Change Management*, *35*(8), 115-130. https://doi.org/10.1108/JOCM-09-2021-0268.

Sullivan, T. (2016). Blitzscaling. *Harvard Business Review*, 94(4), 44–50, https://hbr.org/2016/04/blitzscaling.

Taupin, L., Le Masson, P., & Segrestin, B. (2021). Scale-up phase in deep-tech start-ups: Replication or massive learnings? *R&D Management Conference*, Jul 2021, Online, United Kingdom. https://minesparis-psl.hal.science/hal-03383828.

Tippmann, E., Ambos, T. C., Del Giudice, M., Monaghan, S., & Ringov, D. (2023). Scale-ups and scaling in an international business context. *Journal of World Business*, *58*(1), https://doi.org/10.1016/j.jwb.2022.101397.

Vasutinska, Y., & Kuzminska, N. (2019). Estimating the degree of novelty of a new product: an innovative approach. *Marketing and Management of Innovations*, *2,* 282-294, https://doi.org/10.21272/mmi.2019.2-24.

Vo, T. P., Tran, M. D., & Ly, T. M. Ch. (2022). The relationship between new product creativity components and purchase intention and the mediating impact of perceived values: a study of consumers in Ho Chi Minh City, *Cogent Business & Management*, *9*(1), 2112357, https://doi.org/10.1080/23311975.2022.2112357.

Weng, Y., Li, Y., Chen, X., Song, H., & Zhao, C. X. (2023). Encapsulation of enzymes in food industry using spray drying: recent advances and process scale-ups. *Critical Reviews in Food Science and Nutrition*, 1-18, https://doi.org/10.1080/10408398.2023.2193982.

van Winden, W., Kör, B., Sierhuis, D., & Grijsbach, P. (2020). *Tech Scale-Ups in the Amsterdam City Region*. Hogeschool van Amsterdam. https://research.hva.nl/en/publications/tech-scale-ups-in-the-amsterdam-city-region.

Wodak, R., & Meyer, M. (2009). *Critical discourse analysis: History, agenda, theory, and methodology*. In: R. Wodak & M. Meyer (Eds.), *Methods for critical discourse analysis*.1-33. Sage.

Xiang, Y., Huang, H., Li, M., Li, S., & Yang, X. (2022). Looking for Novelty in Search-Based Software Product Line Testing. *IEEE Transactions on Software Engineering*, *48*(7), 2317-2338, https://doi.org/10.1109/TSE.2021.3057853.

Yoo, H. S., & Jung, Y. L. (2024). The Effect of the Commercialization Failure of SMEs' R&D on Survival. *IEEE Transactions on Engineering Management*, *71*, 6078-6089, https://doi.org/10.1109/TEM.2024.3378690.

Zajko, M. (2017). Challenges of the scaling-up process for start-ups. 8th Balkan Region Conference on Engineering and Business Education and 10th International Conference on Engineering and Business Education Sibiu, Romania, October 2017, https://doi.org/10.1515/cplbu-2017-0009.

Zhang, F., Sun, S., Liu, Ch., & Chang, V. (2020) Consumer innovativeness, product innovation and smart toys. *Electronic Commerce Research and Applications*, *41*, 100974, https://doi.org/10.1016/j.elerap.2020.100974.