IMPACT OF STRATEGY ON BUSINESS PERFORMANCE OF START-UP

Slávik Š., Hanák R., Hudáková I.M., Mišún J.[*]

Abstract: A start-up is an attractive business phenomenon that raises great expectations among founders and investors. The fulfillment of expectations is conditioned by the growth of business performance. The factors that influence the performance and growth of a start-up are mostly hypothetical, they are logically consistent, but there is a lack of quantitative research that would bring more exact scientific knowledge. The research aim is to identify the impact of the business strategy, which is described by a set of parameters, on the business performance of the start-up, which is measured by the growth and volume of sales. The research sample includes 147 start-ups. For the analysis of the research sample, there were used correlation analysis of the relationship between sales and profitability, quartile comparison of the most and least performing start-ups, simple and multiple regression to identify independent variables that significantly influence business performance, and principal component analysis to identify the types of business strategies of start-ups. The main results of the research are: the growth and volume of sales only minimally affect profit indicators; differences in the performance of better and worse start-ups are influenced by small differences in strategy parameters; quality people and their qualified and active action positively affect the performance of the start-up; low cost and excessive sensitivity to the external environment may not lead to higher performance; start-ups choose between five strategies, which are differentiation, low cost, adaptation, action, and resource strategy; the impact of strategy on start-up performance is small, simple and consistent strategies are more effective. The originality and novelty of the research results lie in confirming the existence of factors influencing the performance of start-ups and structuring the actions of start-ups into several types of business strategies.

Key words: start-up, growth factors, sales growth, profitability, business strategy

DOI: 10.17512/pjms.2022.26.2.21

Article history:
Received October 12, 2022; *Revised* November 30, 2022*; Accepted* December 05, 2022

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Introduction

A start-up is a small nascent enterprise that is associated with great expectations. A quick and significant valorization of a series of risky investments, self-realization of the founder of the company, and a satisfied customer are expected. This means that the start-up must achieve a high growth rate in sales and market value, accompanied by above-average profit in the foreseeable future. It is a young enterprise under the age of ten (Kollman et al., 2016) that must build a repeatable and scalable business model (Blank and Dorf, 2020) with high demand potential (Jain, 2018). The OECD (Calvino et al., 2015) defines start-ups as young businesses within the first three years of operation (0–3 years old). According to European Start-up Network (2021), a start-up is an independent organization, which is younger than five years old and aims to create, improve and expand a scalable, innovative, technology-enabled product with high and rapid growth. European Start-up Monitor (2020) defines a start-up as being younger than ten years. It has to have an innovative product and/or service and/or business model. The start-up has to aim to scale up (intention to grow the number of employees and/or turnover and/or markets in which they operate). The attributes of a start-up (young age, modest resources, high expectations) are different from those of a mature enterprise, and therefore the action of a start-up and its impact on business performance requires special research and analysis. Factors affecting growth that are transformed respectively aggregated into business strategies also become factors of viability and sustainability of a start-up. This research aims to improve knowledge about factors and strategies that positively affect the growth of a start-up.

Literature Review

a) The importance of sales and its growth for a start-up and factors affecting growth

The growth of start-ups results from the motivation of founders and investors. The manifestation of the start-up's viability is sales, especially growing sales. Fast-growing sales are valued the most, while the start-up may not be profitable for a relatively long time. The growing performance is a favorable signal for current and future investors. Investors demand a high investment valuation based on a novel and exceptional product or service.

The success of a technological start-up can be measured by the size of the investments obtained and the achievement of a significant level of revenues (Díaz-Santamaría and Bulchand-Gidumal, 2021), while significant revenues are influenced by: the age of the company, the number of employees, reaching the break-even point, commercial capabilities, technological background of partners and enthusiasm of partners. The sustainability of fin-techs, especially from an economic point of view, which evaluates their long-term viability, is reflected in the market value (Davila et al., 2015). Start-up valuation is positively influenced by the improved product quality and market growth (Joglekar and Levesque, 2009). On the other hand, the

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research literature deals little with the factors of start-up destruction; it should especially distinguish between internal and external market reasons for failure (Davila et al., 2015). Advancement in the life cycle of a start-up, entering a new phase of the life cycle significantly depends on the development of technology. Still, the main source of progress is the knowledge of customer/user needs, which depends on marketing skills, human resources, relational capabilities and other heterogeneous resources of the start-up (Keogh and Johnson, 2021). Rapid growth is supported by those important product parameters to the early and late majority of customers. The parameters that excite early adopters and technology enthusiasts are not as important (Gilbert and Davies, 2011).

The development and application of modern technologies are considered key factors in the growth of a start-up's value. Technologies based on big data, clean tech, mobile, and augmented reality increase equity valuation the most. E-commerce, mobile and big data are also attractive for short-term capital (Hidayat et al., 2021). Technology becomes an effective growth factor only if it is integrated into an effective business model. More specifically, the contractor pattern enhances revenue, add-on highly influences growth, customer lock-in boosts valuation, and advertising enhances funding (Haddad et al., 2020). Revenue growth is also conditioned by the location of the start-up, and companies located in low-revenue sites are also a significant part of the start-up world (Chadha and Harlow, 2019). In the early stages of business making, growth is also driven by the desires and ambitions of the entrepreneur and the intended strategy. Growth expectations balance what the entrepreneur wants, i.e. his aspirations, with what is possible, i.e. resources and opportunities (Bager and Schøtt, 2004), (Beier and Wagner, 2017).

Growth in itself is proof of the start-up's viability, the right choice of product/service, and the customer considering the start-up's offering useful. The growth of the start-up is also reflected in the increase in the company's value, which satisfies the investor. The studied growth factors are relatively heterogeneous, and their influence is not sufficiently confirmed by exact methods based on empirical data. The growth must be sustainable; therefore, the impacts identified so far should be more formalized and grouped into more compact units.

b) The relationship between the strategy of a start-up and its growth, more and less formalized growth factors

The strategic goal of a start-up is significant to extraordinary growth, and the strategy (effective action of the start-up) is the way to achieve it. Strategy is a multi-factor phenomenon; therefore, the research effort is focused on identifying a limited number of key factors that significantly influence start-up growth. The task of the strategy is not only the enterprise's survival but also the achievement of measurable success in sales and profit. There is a considerable amount of literature on the determinants of SME growth. The main growth factors are the business environment, the company itself (quality and quantity of resources), its strategy, and the person of the entrepreneur/founder (Gueguen et al., 2015). Korunka et al. (2011) analyzed the growth potential of OPBs (one-person businesses) and came to five groups of

business growth predictors: personal characteristics, resources, strategy, industry, organizational structure, and systems.

Companies that have strived for high growth and succeeded in achieving it relies on strategies combining advanced technology, market aggressiveness, and functional excellence (Pearce and Pearce II, 2020). However, the growth of new companies is also stimulated by cooperative competition (Bouncken and Kraus, 2021). Kuratko et al. (2020) offer several principles for successful blitzscaling, e.g. expansion, sufficient funds, realistic expectations and reasonable goals, healthy corporate culture, the structure supporting growth, and understanding of customer expectations. Cosenz and Noto (2018) developed the concept of dynamic business modeling. It is a strategic tool that allows a better understanding of the operation of the enterprise and the creation of value and the prospective performance of the enterprise, thus experimenting with the business strategies of the new enterprise and exploring the possibilities of its growth.

A study by Ekinci et al. (2020) came to the piece of knowledge that the growth of a company depends not only on financial resources but also on the identities of entrepreneurs. Carbó-Valverde et al. (2022) found that a positive and significant effect on profitability arises when the driver of a new project is a single entrepreneur. Alon et al. (2018) described the impact on start-up performance from a broader perspective and claim that the strong performance of young firms is driven almost exclusively by the forces of selection and allocation. In other words, young firms' fast gains in productivity are driven by inefficient entrants losing market share and exiting quickly rather than productivity growth that occurs within surviving firms. Another growth factor identified by Lee (2020) is relocation to a new location for doing business. The empirical results confirmed that US start-ups were more likely to move as they grew in the developmental process of entrepreneurship.

Some growth factors relate exclusively to technology-based new ventures (TBNVs), and their growth positively and strongly correlates with web search traffic across the sample (Malyy et al., 2021). More specifically (Vanacker et al., 2011), new ventures that use more owner funds, employ more interim personnel, encourage customers to pay more quickly, and apply for more subsidy programs exhibit higher growth over time. Davila et al. (2003) provide evidence of a positive relationship between headcount and value creation. On the other hand, start-up failures come from running out of cash, difficulties in finding customers, and high customer acquisition costs (Contamessa et al., 2018). For a start-up to succeed, it needs passion and good management (Anderson, 1992).

The more compact factors influencing start-up growth are strategy and the entrepreneur/founder, framed by the principles of flash/blitz scaling and business modeling. Other described influences are not excluded, but they can be attributed with a little simplification/distortion to the strategy and personality of the entrepreneur.

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c) Types of strategies

Muramalla and Al-Hazza (2019) describe the strategies that have helped guide India's tech start-ups to success. They are, e.g. deployment of government schemes, finding gaps in the business environment, building brand image and trust, and others. In addition, they identified factors that stimulate the business of technology start-ups, e.g. competitiveness, the growth of the IT sector, and others. However, these empirical rules that help start-ups to achieve their goals cannot be considered consistent or comprehensive business strategies. In works by Bohnsack and Liesner (2019) and Feiz et al. (2021), there were identified five groups of growth hacking strategies, namely the growth hacking funnel of acquisition, activation, revenue, retention, and referral, respectively content, relationship, revenue-making, referral, and analytical, which can result in the creation of business value and progressive growth. However, the described strategies do not form a parallel/variant typology of strategies. They are strategies for achieving successive goals that form a sequence/chain/series. These strategies are not confirmed, or they are not the result of research based on a quantitative model.

Von Geldren et al. (2000) examined the relationship between strategy and start-up performance. They distinguish between five strategies, reactive, opportunistic, complete, critical point and habit strategy, collectively called action strategies. The strategies they recommend for start-ups are taken from other authors. Their formalization is not obvious because they are not described by a set of parameters. They are described verbally and empirically, and their impact on business performance is investigated. The performance of the enterprise is formulated verbally as success, and the sample included 49 start-ups. Hyrynsalmi et al. (2012) identified four general categories of business strategies: hobbyists, one-man businesses, service businesses and miscellaneous business strategies. Categories of strategies are determined based on revenue models, e.g. free (of charge), paid, with a subscription, but revenue models are not quantified; they are only verbally described and are limited to Android-based application developers.

d) Innovation and novelty

Exceptionality, novelty, and innovativeness of a product or service are not the only direct conditions for high growth and high sales of start-ups. This impression of start-up founders is superficial, and many other less visible factors affect sales growth. The exceptionality perceived and highlighted by the creator of the business idea is perceived and appreciated less by the customer. An entrepreneur must also find other factors that encourage growth. The novelty is relatively difficult to promote and does not automatically mean large revenues and growth.

Start-ups can achieve market leadership through quality innovation, but for creating innovation, there are solely responsible high-growth start-ups (Yim, 2008). The successful implementation of innovations and the innovation process are facilitated by cooperation with incumbents (Baloutsos, 2020). According to Gerdsri and Manotungvorapun (2021), the way to sustainable growth is the assessment of the readiness of enterprises driven by innovations (IDE - innovation-driven enterprises).

In the new product development literature, innovativeness is usually associated with technology and/or market discontinuities (Melegati and Wang, 2018). The innovative content of market news does not always have to be radical; examples of new ventures in cleantech rather document the emergence of incremental innovations (Jensen et al., 2020). Novelty is not limited to products, services and technologies; innovation also means companies respond to major challenges through new business models (Bocken and Snihur, 2020). Business model innovation is increasingly seen as a tool to address sustainability challenges (Dentchev et al., 2018; Yunus et al., 2010). Business model innovation is a necessary predecessor to the configuration of an open business model (Ghezzi et al., 2021).

Research conducted in Indonesia also investigated the relationships between the business model, entrepreneurial orientation, innovation, and sustainable performance of digital start-ups (Danarahmanto et al., 2020). Business model innovation enhances internationalization and scaling of doing business, although it requires additional compliance with the needs of new customers if they emerge (Cavallo et al., 2019). TMT (top management team) diversity exhibits a significant threshold effect on the relationship between business model innovation (in terms of novelty-centered and efficiency-centered business models) and firm performance (Guo et al., 2018).

In a start-up, novelty is a multi-object phenomenon, and applying it only to the product would be a mistake. The presence of cross-sectional novelty in a start-up is a significant condition for its growth, and continuous and ongoing innovation is a condition for sustainable growth.

Based on the studied literature, it can be concluded that there is extensive and serious interest in researching the reasons and causes of start-up growth. The growth factors identified so far are relatively heterogeneous. Their influence is usually not confirmed by exact quantitative methods. Empiricism prevails, which must be verified quantitatively. The literature review shows that the key factor is a business strategy, or strategizing a start-up, which, however, is not parameterized and related to specific growth indicators. This is the main motive for carrying out research that wants to deepen and expand knowledge about how the strategic action of a start-up affects the achievement of its growth goals.

Research Methodology

The research goal is to identify the impact of a business strategy described by a set of parameters on the business performance of a start-up, which is expressed by the growth and size of sales. The aim of the research is preceded by several research questions:

Which parameters differentiate the strategy of more successful start-ups from less successful start-ups if the measure of success is growth and sales volume?

What strategies do start-ups use?

Do strategies of start-ups have a measurable impact on sales and growth?

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The research questions are answered using the following partial objectives of the research:

1. Find the relationship between sales indicators and profit ratios (relationship between sales and profitability).
2. Find the difference between the strategy parameters of start-ups with the largest and smallest sales.
3. To determine the impact of strategy parameters on mean growth of sales, mean yearly sales, and sum of total sales since the start-up was founded.
4. Identify types of strategy based on latent factors and determine their impact on sales indicators.

The research sample initially included 186 start-ups. Enterprises whose nature did not correspond to the characteristics of start-ups were eliminated; therefore, the research sample was adjusted to 147 start-ups. The investigated start-ups were founded in 2015 and later. The exception was eight start-ups that were founded in the years 2012 - 2014. The examined start-ups had an average of 8.2 employees. If five start-ups with more than 50 employees are excluded, the average number of employees drops to 7.3. Industry affiliation of the investigated start-ups according to SK NACE (Nomenclature statistique des économiés économiques dans la Communauté européenne): A - Agriculture (forestry and fishing): 1; C - Industrial production: 22; F - Other building completion and finishing work: 3; G - Wholesale and retail trade: 24; I - Accommodation and food services: 3; J - Information and communication: 41; K - Financial and insurance activities: 1; M - Professional, scientific and technical activities: 28; N - Administrative and support service activities: 12; P - Education: 3; R - Arts, entertainment, and recreation: 4; S - Other activities: 5

The field research was carried out between September and November 2020 in the territory of Slovakia in start-ups located mainly in the capital Bratislava and its surroundings. Each start-up was reviewed by one research team member who personally recorded the founder/owner's ratings and responses to the questionnaire. The structure of the research questions follows the standard process of strategic analysis and focuses mainly on the internal and external environment of the start-up. The research is focused on the business strategy of a start-up, i.e. on the internal and external prerequisites that will enable it to exist and survive. The viability of start-ups is measured by indicators of growth and sales volume. The spectrum of business strategies is compiled based on a principal component analysis.

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The dependent variables are compiled from data that have been available since the establishment of the company in the public database of *finstat.sk*. Dependent variables are expressed through three sales indicators:

a) The mean growth of sales is calculated as the average of the inter-annual growth of sales since the founding of the start-up. This method of measuring start-up growth is also used by Unger et al. (2011).

b) The mean yearly sales are calculated as the average annual sales since the founding of the start-up.

c) The sum of total sales is calculated as the sum of annual sales since the founding of the start-up.

The independent variables are the strategy parameters, which are recorded in Table 5 in the range from 1.3 to 7.6. The measurement scales of the independent variables are listed in the questionnaire, which can be found in the appendix. There are few scientific publications on the impact of strategy parameters (independent variables) on the business performance of a start-up. For that reason, the hypotheses about the differences between the most and the least-performing start-ups (Tables 2 and 3) were established more on logical and practical reasoning than based on the results of previous scientific research.

Four different analytical procedures were used to meet the research objectives.

A. Correlation analysis of relationships between sales and profitability indicators, which is intended to show whether favorable performance in sales is complemented by favorable performance in achieving a profit.

B. Comparing the top-performing companies with the least-performing companies. Performance is measured using sales indicators, and differences in strategic parameters between the top and weak companies are sought. Quartiles were calculated for the dependent variables: a) the mean growth of sales and b) the mean yearly sales. In the first quartile, there are start-ups with the smallest and in the fourth quartile with the largest mean growth of sales, respectively, mean yearly sales. The strategy parameters in the fourth and first quartiles are compared to each other to determine the differences between the best and less successful start-ups.

C. Identifying independent variables that significantly influence the business performance of a start-up, which is measured by dependent variables: mean growth of sales, mean yearly sales, and a sum of total sales. Prediction of independent variables was carried out using a) simple regression analysis of individual strategy parameters; b) multiple regression analysis of selected strategy parameters based on their similarity, e.g. action parameters 7.1 to 7.7; c) by modeling all parameters into a single model. For each case and all regressions, control assumptions/criteria were calculated, namely the Durbin-Watson test for autocorrelation and the test for collinearity. The test results meet the required standards and are, therefore, valid.

D. Carrying out a principal component analysis of all independent variables and identifying latent variables that classify the action of start-ups into several types of apparently different strategies.

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Research Results

A. Independence between sales indicators and return financial indicators
The relationships between sales indicators and financial return indicators are mostly statistically insignificant (Table 1). Only the correlation between mean yearly sales and ROA ($p \leq 0.05$) is statistically significant, relationships with total profit ($p \leq 0.1$) or with ROS ($p \leq 0.1$) can be accepted with the reservation. However, the relationship (correlation coefficient) is minimal. Mean sales growth and the sum of total sales since the company's establishment do not affect profit indicators.

Table 1. Relationship between sales indicators and return financial indicators

Sales indicators	ROA (p)	ROE (p)	ROS (p)	Total profits for all years (p)
Mean sales growth	.0002 (.998)	.03 (.603)	- .10 (.131)	.002 (.741)
Mean yearly sales	0.12 (.039)	0.10 (.11)	0.11 (.0723)	0.11 (.055)
Sum of total sales from the establishment	.02 (.749)	.03 (.636)	.05 (.381)	.05 (.447)
measured by Kendall's Tau B, ROA – return on assets, ROE – return on equity, ROS – return on the sale				

B. Comparing top performers in sales with the poorest in specific strategy parameters
Mean sales growth.
Table 2 lists strategic parameters that are statistically significant ($p \leq 0.05$). The fastest-growing start-ups in the 4th quartile have fewer novel business ideas (parameter 1.6) at the Central European level than the slowest-growing start-ups in the 1st quartile that have business ideas at the European level. Start-ups with higher growth are located in industries (parameter 2.1) that are approaching the maturation stage, while slower-growing start-ups are located in industries that are at the beginning of growth. Slower start-ups are located in environments (parameter 2.3) with a lower frequency of changes than faster start-ups. Slow-growing start-ups are in environments (parameter 2.5) with less intense competition than fast-growing start-ups that operate in environments with more intense competition. The target market/segment (parameter 5.1) of slow start-ups is more novel and less competitive than the target market/segment of fast start-ups. Slower-growing start-ups have more differentiated products (parameter 6.1) than faster-growing start-ups. Costs compared to price (parameter 6.6) are lower for slower-growing start-ups than for faster-growing start-ups. Slower-growing start-ups serve one segment (parameter 6.4), while faster-growing start-ups slightly increase the number of segments.

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Table 2. Comparing 1ˢᵗ and 4ᵗʰ quartile of start-ups ordered according to *mean sales growth* in following strategy parameters

Strategy parameter	Mean; SD for the 1ˢᵗ quartile n =30	Mean; SD for the 4ᵗʰ quartile n = 29	Mann-Whitney U; p-value	Effect size	Hypotheses
1.6 Degree of the novelty of the business idea	3.47; 1.17	2.9; 1.32	317; p = .033	.27	$\mu_1 > \mu_4$
2.1 The life cycle phase of an industry	2.27; .87	2.72; .96	329.5; p = .042	.24	$\mu_1 < \mu_4$
2.3 Frequency of fundamental changes in the business environment	2.07; 1.01	2.66; 1.14	302; p = .017	.31	$\mu_1 < \mu_4$
2.5 Intensity of competition	2.33; .92	2.93; 1.16	312; p = .025	.28	$\mu_1 < \mu_4$
5.1 The target market/segment	3.63; .81	3.14; .92	318.5; .031	.27	$\mu_1 > \mu_4$
6.1 Differentiation/ dissimilarity	3.5; .97	3.14; .88	342; p = .07	.21	$\mu_1 > \mu_4$
6.6 Costs: comparison with the price	3.07; 1.01	2.52; .078	284.5; p = .008	.35	$\mu_1 > \mu_4$
6.4 Segmentation	3.00; 1.17	2.48; 1.09	332; p = .051	.24	$\mu_1 > \mu_4$
μ_1 = mean for the 1ˢᵗ quartile, μ_4 = mean for the 4ᵗʰ quartile					

Mean yearly sales

Start-ups in the 4th quartile (highest mean yearly sales) compared to start-ups in the 1st quartile (lowest mean yearly sales) have higher expertise and business experience of the leading person, are in a higher stage of the industry life cycle, encounter a higher frequency of major changes in the business environment, they have slightly better access to external finance, they perceive and respond to external stimuli better, they are in a stronger competitive position, and they can differentiate their strategies more from the strategies of competitors (Table 3). The differences between the 1st and 4th quartiles are not large but not negligible; on average, they are approximately 0.5 points on a five-point scale. The biggest difference of 0.91 points is recorded between the competitive position of more efficient and less efficient start-ups.

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Table 3. Comparing 1st and 4th quartile start-ups ordered according to *mean yearly sales* in following strategy parameters

Strategy parameter	Mean; SD for the 1st quartile, n =36	Mean; SD for the 4th quartile, n =33	Mann-Whitney U; p-value	Effect size	Hypotheses
1.3 Expert knowledge	82.86; 11.75	87.79; 13.05	423.5; .043	.29	$\mu_1 < \mu_4$
1.4 Business experience and skills	67.64; 24.39	77.39; 20.4	431; .024	.27	$\mu_1 < \mu_4$
2.1 The life cycle phase of an industry	2.19; .92	2.85; .91	367.5; .002	.38	$\mu_1 < \mu_4$
2.3 Frequency of fundamental changes	2.17; .94	2.52; .97	475.5; .067	.2	$\mu_1 < \mu_4$
5.6 Finance (available)	3.11; 1.01	2.7; 1.05	456.5; .042	.23	$\mu_1 > \mu_4$
7.3 Perception and sensitivity to ext. stimuli	3.69; .86	3.97; .81	482.5; .075	.19	$\mu_1 < \mu_4$
7.4 Dynamics and speed of action/response	3.64; .96	4; .09	462.5; .047	.22	$\mu_1 < \mu_4$
7.5 Competitive position	3.39; .87	4.3; .77	261; < .001	.56	$\mu_1 < \mu_4$
7.6 Difference from strategies of competitors	3.14; .93	3.64; .78	408.5; .01	.31	$\mu_1 < \mu_4$
μ_1 = mean for the 1st quartile, μ_4 = mean for the 4th quartile					

C. Predicting sales growth, yearly sales, and total sales
Mean growth of sales
The task of the business strategy is to achieve the goals of the start-up. One group the main goals are sales and growth of sales. These are extremely important indicators not only for the start-up itself but also for current and future investors. In particular, sales growth justifies a start-up's viability and attractiveness to investors. Statistically significant predictors were identified from the entire set of strategic parameters (questionnaire in the appendix). They were compiled into a model that statistically significantly predicts the growth of sales of the studied start-ups (Table 4).

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Table 4. Strategy parameter model coefficients for a dependent variable *mean growth of sales*

Predictor	standardized β	SE	t	p
Intercept		4.25	1.56	0.121
5.6. Internal people available	.18	0.56	2.02	0.046
6.6 Costs: comparison with the price	-.2	0.83	-2.21	0.029
7.3 Perception and sensitivity to external stimuli	-.3	1.09	-2.33	0.022
7.4 Dynamics and speed of action/response	.28	1.04	2.18	0.032
adjusted R^2 = .08; F (4, 110) = 3.48; p = .01; p = .1				

The availability of human resources has a positive effect on the sales growth of the investigated start-ups. However, the growth of sales is threatened prospectively if the availability of suitable, qualified (rare) people will gradually decrease. Costs compared to product price have a negative impact on sales growth, which means that the lower the costs, the less favorable their impact on sales growth. Perceptiveness and sensitivity to external stimuli also have a negative effect on sales growth, and this obviously means that observing the business environment in short intervals leads to de-concentration of attention and neglect of the business core. The dynamism and speed of action/response positively affect sales growth, and due to the opposite dependence of receptivity and sensitivity, it can be assumed that start-ups respond to external stimuli quickly and dynamically but selectively according to their importance and impact on sales growth. Start-ups apparently do not want to abandon a proven business concept and invest time, money, and effort in other opportunities. The model (Table 4) explains 8% of the variability in the sales growth of the investigated start-ups.

Mean yearly sales and sum of total sales
All strategic parameters, individually and in combination, were examined in all possible models as predictors of the independent variables of *mean yearly sales* and *sum of total sales*. Only the same statistically significant predictor was found for both independent variables: *the target market/segment*. The statistical parameters of this predictor for the dependent variable of *mean yearly sales* are adjusted R^2 = .02; F (1, 129) = 3.37; p = .069, standardized β = - .16; p = .069. The statistical parameters of this predictor for the dependent variable of *sum of total sales* are R^2 = .02; F (1, 129) = 3.39; p = .068, standardized β = - .16; p = .068. Results indicate that unrivalled markets, which are completely new, in other words, markets just emerging, do not generate large absolute sales yearly or in total.

D. Search for a strategy with impact on sales
To identify effective strategies, principal component analysis was chosen, which is better for the collected data set than explanatory factor analysis (Velicer et al., 2000; Ruscio and Roche, 2012; Velicer and Jackson, 1990) to avoid excessive extraction of factors and distortion of results. Principal component analysis was used to identify latent factors (identification of strategy) that were loaded by a combination of

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strategy parameters. The Oblimin method was used for rotation, and the number of components was based on parallel analysis. Bartlett's test of sphericity was used to check assumptions, where X (378) = 1013.18; $p < 0.001$. Five latent factors were identified (Table 5), cumulatively explaining 43.23% of the variance. Then, the identified factors were used as predictors of sales.

The strongest factor (explained variance is 11.63%) can be named a differentiation strategy. It is a strategy based on a novel business idea, the improved value offered compared to the usual offer, including improved accompanying services, it is based on product differentiation and greater added value of the product compared to similar products. This strategy is characterized by a higher degree of purposeful action, achieves a stronger competitive position, and the implemented strategy differs from the action respectively real strategies of competitors. The identified strategy (strategic parameters with sufficient load) does not predict any dependent variables (*sum of total sales, mean yearly sales nor mean growth of sales*). This finding is consistent with previous knowledge and previous findings of the authors (Slávik, 2019; Slávik et al., 2021), e.g. an original and unique product does not straightforwardly transform into massive absolute sales or significant growth of sales.

The second strongest factor (explained variance is 8.31%) can be named a low-cost strategy. It is a strategy based on lower costs than competitors achieve, on low costs compared to the price of the product, and on a price lower than the price at which competitors sell the product. This strategy is a predictor *of mean growth of sales* with some limitations because it is close to statistical significance. It has statistical parameters adjusted $R^2 = .02$; $F (1, 113) = 3.16$; $p = .078$, standardized $\beta = -.17$; $p = .078$. The low-cost strategy cannot predict the independent variables' *sum of total sales* nor *mean yearly sales*.

An adaptation strategy can be named the third factor (explained variance is 7.81%). The strategy's dominant parameters represent a start-up's ability to exist in an environment of greater changes with a higher frequency and with a greater intensity of competition and in industries that grow to mature and therefore have more intense competition. This situation is also confirmed by the presence of start-ups with this strategy in older and more competitive target markets or segments. The third factor has a statistically significant effect on *sum of total sales* $R^2 = .03$; $F (1, 123) = 4.25$; $p = .041$, standardized $\beta = .18$; $p = .041$ and on *mean yearly sales* $R^2 = .03$; $F (1, 129) = 4.5$; $p = .036$, standardized $\beta = .18$; $p = .036$.

Table 5. Principal component analysis: strategy parameters component loadings

Strategy parameters	Component/Number of loading items				
	1/9	2/4	3/5	4/5	5/10
1.3 Expert knowledge of the leading person					0.6
1.4 Business experience and skills of the leading person and the team		-0.36			0.48
1.6 Degree of the novelty of the business idea	0.5				
2.1 The life cycle phase of an industry			0.33		
2.2 Predictability of future development (3 - 5 years)					-0.3
2.3 Frequency of fundamental changes in the business environment			0.46	0.42	
2.4 Magnitude of changes in the business environment			0.65		
2.5 Intensity of competition			0.67		
4.1 Attitude towards larger incumbents: cooperation ↔ competition	-0.38				0.34
4.2 Attitude towards innovation				-0.32	
5.1 The target market/segment			-0.67		
5.3 The customer value proposition in comparison with the current offer	0.67				
5.4 Compared to the current offer, the accompanying services are	0.34				
5.6 To what extent are disposable resources rare – finance					0.45
5.6 To what extent are disposable resources rare – technology				-0.44	0.55
5.6 To what extent are disposable resources rare – people					0.44
6.1 Differentiation/dissimilarity from similar products	0.75				
6.2 Added value/usefulness compared to similar products	0.78				
6.4 Segmentation					-0.41
6.5 Costs: comparison with competitors		0.85			
6.6 Costs: comparison with the price		0.76			
6.7 Price: comparison with competitors		0.69			
7.1 Unambiguity of the action	0.39				
7.2 Activity/vivacity/agility of the action					0.45
7.3 Perception and sensitivity to external stimuli				0.82	
7.4 Dynamics and speed of action/response to external stimuli				0.82	
7.5 Competitive position	0.46				0.38
7.6 Difference from strategies of competitors	0.68				

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The fourth factor (explained variance is 7.81%) can be named an action strategy because it is based on a sensitive perception of the external environment and dynamic response to external stimuli. The external environment encourages such a strategy because fundamental changes occur at a higher frequency. Start-ups in such an environment prefer the quick implementation of business ideas over their secrecy or legal protection. The fourth factor/action strategy does not have a statistically significant impact on growth and sales volume.

The fifth, last identified factor (explained variance is 7.67%) is at first glance rather inconsistent. Still, five of the total number of ten relevant strategic parameters are the internal resources of a start-up, which are the founder's expertise, the entrepreneurial experience of the founder and the team, and the availability of scarce resources (finance, technology, and people). The remaining parameters indicate better rather than worse predictability of future development, cooperation as well as competition with larger established companies, doing business in several market segments, defensive alternates offensive and vice versa. The competitive position is weak to average. The fifth factor can be named a resource strategy (resource-based strategy), which maneuvers the start-up into situations and frameworks in which it can succeed with its scarce but range-limited resources. The fifth factor/resource strategy does not have a statistically significant impact on growth and sales volume.

Discussion

Sales growth shows only a minimal impact on profit
The investigated start-ups cannot turn growing sales into a more significant profit measured by both relative and absolute indicators. The reasons can be found in the research results, which are presented in part A. They are, e.g. little novelty of the business idea, indistinct product differentiation, higher competition, and higher costs compared to the price, while start-ups with higher growth (4th quartile) usually have these parameters slightly worse. The explanation probably lies in a lack of ambidexterity (Balboni et al., 2019) when a start-up and small company is not ready for simultaneous improvement, perhaps pivoting, of a business idea and its production and commercial implementation.

Differences in performance are greater than differences in strategic parameters
The differences in strategic parameters between the slowest and fastest growing start-ups are not large, about 0.5 points on a five-point scale, but they are not negligible and are, therefore, evidence that there are slightly different external and internal conditions for start-ups with slower and faster growth. The existence of differences of this kind can also be explained by the fact that in early phases of development, start-ups attempt to obtain as many customers as possible, but according to Ries (201, pp. 20, 21), they are still seeking concept and start-ups they are not equally successful at this. The second conclusion is that start-ups in the 1st quartile (slowest) and the 4th quartile (fastest) do not operate on average in extreme external and internal conditions expressed by the rating scales. However, given the nature of the start-up business, such expectations would be appropriate, e.g. very

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high to a unique difference of products, meager costs compared to the price, low intensity of competition, European or global originality of the business idea, etc.

Relatively small differences between the strategic parameters of top and weak start-ups are reflected in larger differences in their business performance

This fact explains that business performance is influenced by other strategic factors that were not included in the research or were not statistically significant due to the sample size. Another explanation is that the slightly different assumptions for achieving approximately the same performance are influenced by different implementations, the momentary disposition of the person making the main decisions, or even serendipity (Pluchino et al., 2018).

The sufficiency of qualified (rare) people and dynamic selective action stimulate the growth of start-up sales. Low costs compared to the product price and high sensitivity to external stimuli lead to a decrease in the sales growth of the start-up

The result of the research confirms the importance of quality human resources for the viability of a start-up. Limited resources, including limited human resources, enable quick decision-making and flexible response to selected external stimuli. Butler (2017) writes that entrepreneurs are curious seekers, comfortable with risky situations, like to set up various initiatives, and are natural traders. Bussgang (2017) observed that good start-up adepts are well-versed in uncertainty, crossing conventions and thinking as founders or authors. The negative impact of low costs compared to the price of the product is probably caused by the increasing price or decreasing product quality because the customer does not know the volume of costs; he/she only knows the price and quality.

New, unrivalled markets are not a self-evident guarantee of sales growth

The generally accepted assertion that new markets are a guaranteed area for sales growth (Kim and Mauborgne, 2015, 2017) is challenged by research results. However, new markets are also a space that is not fully explored, new opportunities are short-term, customer behavior is volatile, the new product may be unreliable or unfinished, distribution fails, and new demand is limited. Simply put, new markets can also be full of risks.

Differentiation strategy

Although differentiation is an important strategy for start-ups, it does not guarantee immediate and obvious business success, probably after the initial enthusiasm and hype acceptance of the novel product, there is a decline that corresponds to Gartner's curve of exaggerated (hype) response (www.gartner.com), and then there is a lengthy market building. A novelty requires some time to be accepted not only by early adopters but also by the early majority of users (Moore, 2014). Differentiation is apparently a necessary but not a sufficient condition for the business success of a start-up. Differentiation embodies the primary reason for the nascence and purpose of the existence of start-ups: the difference, novelty, progressive innovation, more perfect satisfaction of an existing need, or satisfaction of a hitherto unknown need.

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Low-cost strategy. A low-cost strategy is the opposite of a differentiation strategy. It is very difficult, almost impossible, to simultaneously achieve goals with both strategies (Hall, 1980). A start-up has to choose one strategy only, whereas the impact on sales is slightly more visible with the low-cost strategy. This is probably because low costs, especially the low price of the product, are a more convincing and immediate argument for customers than the novelty and difference of the product, which is a bet on the future.

The adaptation strategy is apparently forced (caused) by the nature of the business environment, which changes rapidly, and intense competition exists

This strategy shows the advantage of a small company that can quickly adapt to changing conditions (Collis, 2016), but it can be assumed that adaptability will gradually weaken as the company grows. This strategy is weakened by intense competition. This is antithetical to the purpose of a start-up business making, which is to create or seek markets with little or no competition. Schramm (2018) argues in favour of an adaptation strategy. He doubts planning and rejects it as a tool for establishing, developing and acting a new company. According to Schramm, a new company must do one thing: invent a new product and go out with it to the public. What happens next is a matter of learning from practice or learning by doing.

Action strategy

Action and adaptation strategies are resembling. The difference between them lies in the fact that the adaptation strategy is based on learning about the environment and does not provide relevant knowledge about the actions of the start-up. On the other hand, action strategy is less about getting to know the environment and more about real action and entrepreneurial experimentation. The debate of experienced entrepreneurs (Shah et al., 2018) recommends less planning, more action and accomplishing something, gaining momentum and maintaining it. The ABCD model (Yin et al. 2019) is also a consequence of the limitations of the planned strategy and the necessity to let room for an unplanned, emergent, or action strategy.

Resource strategy

The dominant representation of internal resources in strategy parameters is combined with a start-up's average, unremarkable performance. In this case, start-ups apparently fail to implement resource assumptions into consistent and efficient actions with a more explicit business result. A significant influence of resources and capabilities on start-up growth was also noted by Pugliese et al. (2016), but their effect is weakened by the less clear role of the external environment.

Growth and volume of sales are influenced by simpler and more consistent strategies

The statistically significant impact of the identified strategies on sales (sales indicators) is small. The strategy of low costs with a reservation (it is close to statistical significance) affects *the mean growth of sales*. The adaptation strategy affects the *sum of total sales* and *the mean yearly sales*. The influence of both strategies on sales indicators probably resides in the smaller number of relevant independent variables (four and five strategic parameters) identified using principal

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component analysis and their mutual relationship. In the case of the low-cost strategy, these are costs and prices. In the case of the adaptation strategy, these are mainly the frequency of external changes, receptivity, and response to stimuli from the external environment. The other strategies do not predict any of the dependent variables, or the nature of these strategies has no statistical impact on sales figures. The actual existence of strategies may not, in every case, manifest itself in an exactly identified impact on growth and sales volume. Strategies that have a smaller number of strategic parameters with a greater load are more resultative. The influence of various parameters and factors on the performance of young and innovative enterprises is mostly inconsiderable, and among the ten to fifteen parameters, two or three parameters/factors are relevant, i.e. statistically significant (Isaksson et al., 2021; Ranniko et al., 2019).

Conclusion

The main results of the research are as follows: the growth and volume of start-up sales only minimally affect profit indicators; differences in the performance of better and worse start-ups are influenced by small differences in strategy parameters; quality people and their qualified and active actions positively affect the performance of the start-up; low costs and excessive sensitivity to the external environment may not lead to higher performance of start-ups; start-ups choose between five strategies, which are differentiation, low-cost, adaptation, action, and resource strategy. Together they explain 43.23% of the variance; the impact of strategy on the performance of a start-up is small, but simple and consistent strategies are more effective.

The research has the following implications for business and investment practice: investing in start-ups should be very selective; converting favorable results in sales into profit is a very demanding and complicated task; higher resultant performance of a start-up is influenced by small differences in strategy and a relatively small set of strategic parameters, and therefore, a serious challenge for the start-up founder is to reveal which ones they are.

Research results are limited by the size of the research sample and the length of the time series, but expecting a long time series from a start-up is contrary to its purpose and nature. The composition of the research sample is heterogeneous due to the number of industries, but it is difficult to compile a more homogeneous sample because the number of start-ups in the country is limited and finite. The sample can be blamed for a smaller territorial scope, but the largest concentration of start-ups is in the capital and its immediate surroundings.

Continuing research could be concerned with deepening and expanding knowledge about accelerators and inhibitors of start-up growth, getting the real picture of the role of start-ups in the world of economy and business, and searching for a consistent system of strategies explaining the action of start-ups.

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WPŁYW STRATEGII NA WYNIKI DZIAŁALNOŚCI GOSPODARCZEJ START-UPU

Streszcznie: Start-up jest atrakcyjnym zjawiskiem biznesowym, który budzi wysokie oczekiwania zarówno wśród ich założycieli jak i inwestorów. Spełnienie niniejszych oczekiwań jest uwarunkowane wzrostem wyników działalności. Czynniki wpływające na wyniki i wzrost start-upu mają w większości charakter hipotetyczny, są logicznie spójne, ale brakuje badań ilościowych, które przyniosłyby dokładniejszą wiedzę naukową. Celem badań jest określenie wpływu strategii biznesowej, którą opisuje zestaw parametrów, na wyniki biznesowe start-upów, mierzone wzrostem i wielkością sprzedaży. Próba badawcza obejmuje 147 start-upów. Do analizy próby badawczej wykorzystano analizę korelacji zależności między sprzedażą a rentownością, porównanie kwartylowe start-upów osiągających najlepsze i najgorsze wyniki, regresję prostą i wieloraką w celu identyfikacji zmiennych niezależnych, które istotnie wpływają na wyniki biznesowe oraz analizę składowych głównych mającą na celu identyfikację typów strategii biznesowych start-upów. Główne wyniki badań to: wzrost i wielkość sprzedaży w minimalnym stopniu wpływają na wskaźniki zysku; na różnice w wynikach lepszych i gorszych start-upów wpływają niewielkie różnice w parametrach strategii; kompetentni ludzie oraz ich wykwalifikowane i aktywne działanie pozytywnie wpływają na wyniki start-upów; niskie koszty i nadmierna wrażliwość na otoczenie zewnętrzne mogą hamować wyższe wyniki start-upów; badane start-upy wybierały jedną spośród pięciu następujących strategii, różnicowania, niskich kosztów, adaptacji, działania oraz zasobowej. Wpływ strategii na wyniki start-upu jest niewielki, proste i spójne strategie są bardziej efektywne. Oryginalność i nowość wyników niniejszych badań polega na potwierdzeniu istnienia czynników wpływających na wyniki start-upów oraz na ustrukturalizowaniu działań start-upów w kilka rodzajów strategii biznesowych.

Słowa kluczowe: start-up, czynniki wzrostu, wzrost sprzedaży, rentowność, strategia biznesowa

战略的影响 初创企业的经营业绩

摘要：初创企业是一种有吸引力的商业现象，在创始人和投资者中引起了极大的期望。预期的实现是以企业业绩的增长为条件的。影响初创企业业绩和增长的因素大多是假设性的，它们在逻辑上是一致的，但缺乏定量研究，这将带来更确切的科学知识。研究的目的是确定由一系列参数描述的商业战略对初创企业的经营业绩的影响，而经营业绩是由增长和销售量来衡量的。研究样本包括147家初创企业。对于研究样本的分析，使用了销售和盈利能力之间关系的相关分析，表现最好和最差的初创企业的四分位数比较，简单回归和多元回归以确定显著影响经营业绩的自变量，以及主成分分析以确定初创企业的经营战略类型。研究的主要结果是：销售增长和销售量对利润指标的影响很小；较好和较差的初创企业的业绩差异受战略参数的微小差异影响；高质量的人员及其合格和积极的行动对初创企业的业绩有积极的影响；低成本和对外部环境的过度敏感未必能带来较高的业绩；初创企业在五种战略中选择，即差异化、低成本、适应、行动和资源战略；战略对初创企业业绩的影响很小，简单和一致的战略更为有效。研究结果的原创性和新颖性在于证实了**影响初**创企业绩效的因素的存在，并将初创企业的行动结构化为几种类型的商业战略

关键词：初创企业，增长因素，销售增长，盈利能力，商业战略