

RESPONSE OF HIGH-GROWTH ENTERPRISES TO THE CRISIS CAUSED BY THE COVID -19 PANDEMIC*

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ABSTRACT This paper aims to evaluate the response of high-growth enterprises (HGEs) to the circumstances caused by the COVID-19 pandemic. Adaptation to the pandemic situation presented an enormous challenge for these enterprises. The ability to exercise sound judgment affects rational decision-making and adaptation to the circumstances. The study adopts a situational theory perspective related to high-growth enterprises. Data collection was conducted twice - at the beginning of 2019, and after the third wave of the COVID-19 pandemic, in October 2021. The Generalized Estimating Equations (GEE) method was used to analyze the sample of 150 Polish HGEs. Results show that the impact of the pandemic mainly relates to the reduction or stagnation of market opportunities. The importance of human resources decreased in favor of technological and financial resources. The majority of the surveyed companies also maintained their HGE status.

KEYWORDS: *contingency theory, high-growth enterprises, COVID-19 pandemic, Generalized Estimating Equations, market indicators*

1. INTRODUCTION

A crucial feature of proper enterprise management is coping with new, complicated, and difficult situations. Their specificity is individual and may bring an opportunity to one entity while a threat to another. Nevertheless, unknown or sudden operating conditions always result in a challenge for managers. Their approach to solving unexpected management prob-

lems is often subjective, determining the given situation's complexity. From the situational point of view, enterprise management assumes specific methods and means that different conditions lead to achieving intended goals. It means no universal solutions for management problems can be used in any circumstances. This management concept is referred to in the literature as the contingency theory. Adopting the point of view of conceptual assumptions of this

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theory is particularly important in crises, which cause sudden and unpredictable economic turbulences, thus making the enterprises face challenging conditions. Properly evaluating a situation determines rational decision-making as a prerequisite for adaptation to circumstances.

The COVID-19 pandemic provides a significant example of turbulence in the enterprise environment. Methods used by enterprises to adapt to the pandemic presented an enormous challenge. Enterprises differ in methods used for coping with challenging and unpredictable situations. Hence they have different resilience to the crisis. The undertaken topic of research on situational conditions relates to high-growth enterprises (HGEs) that belong to the group of innovative enterprises; in addition, they quickly react to changes in the market and adapt to its requirements. The main scientific objective of this paper is an assessment of the response of high-growth enterprises to the circumstances caused by the COVID-19 pandemic.

2. LITERATURE REVIEW

Contingency theory in management was developed in the 1960s. Its conceptualisation can be found in the works of Burns and Stalker (1961), Lawrence and Lorsch (1967), and Woodward (1965). It assumes that the effectiveness of adopted management methods is determined by a specific situation conditioned by unforeseen events. The original studies on this subject indicated that enterprise operations should be adapted to the situational context in which a given entity operates to achieve the best possible results. The precursors of this concept claimed that there is no single best method of management, decision-making, and leadership, as different circumstances require different actions, and specific effective management methods in one situation prove ineffective in another. Managing an organization and developing its structure depends on the environment. It was suggested that most organizations include the relation "environment – structure – performance" concept (Williams, 2017). Donaldson (2001), one of the prominent supporters and popularizers of the situational theory, also indicated that the organization's effectiveness results from matching organization's features to key selected factors related to specific challenges the organization faces.

The interpretation of the situational theory assumption indicates that organizations are open systems, sensitive to environmental contexts, and different in the ability to process information on the environment (Victor, 2020). Ghofar and Islam (2015)

highlight that the market environment is seen as a critical situational factor, which makes the effectiveness of enterprise operations dependent on their ability to adapt to the environment. These authors also indicate that enterprises' adaptation skills determine their future development and their possibility of survival. However, due to the high variability of the environment, it isn't easy to adapt. Contingency theory concludes by observing reality and searching for optimal solutions, matching the environment. This seems particularly important in a turbulent environment characterized by uncertainty, variability, and turbulence. Such uncertainty in social, economic, and legal dimensions was observed during the COVID-19 pandemic.

The five-level scale of environment turbulence, defined by Ansoff (1985) in the 1970s, recognizes the last two levels as discontinuous environments. Also, the last, fifth level covers unpredictable changes that occur at a pace faster than the enterprise responds to them. The possibility of an unexpected business interruption, crisis, or natural disaster is unsurprising. Mitroff and Alpaslan (2003) found that the number of regular crises (economic crises, physical crises, or personnel crises) is lower than the number of abnormal crises (criminal crises, information crises, reputation crises) or natural disasters. Enterprises have not fully coped with the COVID-19 pandemic; currently, some must face threats and consequences of the war in Ukraine. Each of these crises brings about such disruptions as cash flow problems, turnover loss, production and consumption constraint, labor market disruptions, and supply chain disruptions (Jiang et al., 2021; Pedersen & Ritter, 2020). It is worth emphasizing that the crisis events constitute a turning point in the global economy and enterprise operations. While causing numerous negative consequences, they also have a bright side, as they force in-depth, critical reflections, further stimulating development.

Previous studies mention that effective business transformations in the face of rapid market changes depend on the speed of actions taken (Li et al., 2022), which positively affect enterprises' financial performance and profitability. Those studies are especially significant today, as enterprises operate in a highly uncertain environment. Decision-making requires the observation of market changes and immediate response to those changes. Many enterprises had to react continuously and timely, e.g., in the form of resilience or adaptability (Pedersen & Ritter, 2022). This means that enterprises had to develop many solutions, ensuring flexibility and the ability to respond to rapidly changing markets and customer needs (Berman, 2012; Li et al., 2022).

A pandemic, like any crisis, is determined by a

specific duration, while changes that it forces are often not of a temporary nature. Many of the implemented modifications remain in enterprises permanently and set new standards. Although digital transformation has been observed in enterprises for a long time, only COVID-19 resulted in the increase in technological changes and the stimulation of digital entrepreneurship to face various challenges (Iivari et al., 2020; Secundo et al., 2021; Modgil et al., 2022). Many enterprises have taken actions aimed at creating alternative business models (Seetharaman, 2020; Verma & Gustafsson, 2020), new operating models focused on the customer and backed by proper management (Graves & Karabayeva, 2020; Lee et al., 2020), development of dynamic skills responsible for integrating and reconfiguring internal and external skills, resources and functional competences. A new approach to the customer, supplier, and market conditions is crucial in making strategic decisions to survive in the market and remain competitive. Therefore, we formulate the research question: What changes in the scope of their activities were implemented by high-growth enterprises due to the COVID-19 pandemic?

3. METHODS

Data collection on high-growth enterprises was conducted twice. The first data collection was performed in early 2019, and the second after the third wave of the pandemic in October 2021. Data were collected from the same research sample of 150 Polish enterprises using the same research instrument (questionnaire). According to the OECD definition (2010), high-growth enterprises were identified as those which demonstrated an increase in sales revenues or employment by more than 20% on average over the last three years. Qualifying enterprises for both the 2019 and 2021 surveys had to meet the criterion of being classified as an HGE as defined by the OECD. Table 1 shows the fundamental data about the surveyed enterprises.

In 2019, all entities selected for the survey met the criteria for high-growth enterprises. In contrast, 25 entities lost their high-growth enterprise status in 2021. Empirical research was conducted aiming at selected aspects of high-growth enterprises' response to the crises caused by the COVID-19 pandemic and the conditions that those enterprises faced. The in-depth analyses used Generalized Estimating Equations (GEE), which allows the analysis of the results obtained in repeated surveys (Garsons, 2013). High-growth enterprises were analyzed in terms of four-factor groups, i.e., (a) changes of revenue sources, (b) changes in relationships with key suppliers, (c) assessment of resource categories, and (d) assessment of intangible resources. In addition, the GEE method allows the analysis of the statistical significance of the interaction between changes occurring over time and the drivers of those changes. The change drivers were identified regarding implementing changes related to market orientation, key suppliers, and critical consumers.

4. RESULTS

The following were analyzed first: actions taken by HGEs to change the number of products/services offered, changes in the availability of material resources from suppliers as well as external financial resources, decisions related to self-financing of operations consisting in collecting funds, and finally actions taken in development investment (Table 2). In addition, the structure of financing sources for high-growth enterprises during the COVID-19 pandemic was analyzed. This structure, apart from the standard internal and external financing possibilities, also included preferential financing obtained under the PFR (Polski Fundusz Rozwoju – Polish Development Fund) Financial Shield, which came in the form of state subsidy for enterprises affected by the COVID-19 pandemic consequences (Table 3).

TABLE 1. Fundamental on the surveyed entities

Year	Type of enterprise by number of employees						Characteristics of HGEs					
	Small		Medium		Large		Sales revenue growth		Employment growth		Sales revenue growth and employment growth	
	N	%	N	%	N	%	N	%	N	%	N	%
2019	52	34.7	61	40.7	37	24.6	113	75.3	9	6.0	28	18.7
2021	51	34.0	61	40.7	38	25.3	94	62.7	15	10.0	16	10.7

SOURCE: Authors.

TABLE 2. Selected responses and business conditions of HGEs in Poland after the third wave of the COVID-19 pandemic

	Number of products and services offered		Availability of material resources from suppliers		Availability of external financial resources		Collecting funds		Ongoing development investment	
	N	%	N	%	N	%	N	%	N	%
No change	98	65.33	57	38.00	109	72.67	50	33.33	104	69.33
Increase	25	16.67	9	6.00	3	2.00	8	5.33	9	6.00
Decrease	27	18.00	84	56.00	38	25.33	92	61.33	37	24.67

SOURCE: Authors.

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TABLE 3. Structure of funding sources used by HGEs during the COVID-19 pandemic

Funding source used during the pandemic	N	%
Preferential financing under PFR Financial Shield	75	50.00
Banking sector loans and advances	31	20.67
Leasing	64	42.67
Other external forms of financing	31	20.67
Funds from accumulated cash	81	54.00
Sale of assets	4	2.67

SOURCE: Authors.

Based on Table 2, it can be stated that most surveyed companies did not change the number of products and services offered. About 16% of HGEs increased this number, while 18% decreased their offer. The analysis of the availability of material resources during the pandemic indicates that 56% of high-growth enterprises experienced a decrease in this availability, and for 38%, it remained unchanged. Surveyed enterprises found that the possibility of obtaining external financing sources did not change in the analyzed period, as declared by over 72% of the survey respondents. However, 25% of HGEs indicated the limited availability of external funding sources. A significant number of surveyed companies (61%) faced the decreased possibility of collecting funds. Also, almost 70% of HGEs did not change their ongoing development investment, but about 25% of enterprises limited their investment activities.

Table 3 indicates that 50% of studied enterprises benefited from preferential financing under the PFR Financial Shield. However, funds from accumulated cash were the most popular source of financing operations during the COVID-19 pandemic. This form of financing was utilized by 54% of the survey respondents. Also, over 42% chose to lease. The use

of other external sources was declared by over 20% of high-growth enterprises. A positive signal can be derived from the data showing that only 2.67% of entities sold their assets to finance operations during the pandemic. Thus, over 97% of HGEs did not reduce their assets to use them as a source of funding.

In addition, the effect of the COVID-19 pandemic on the general features determining high-growth enterprises was analyzed. In this respect, the changes in the number of employees, sales revenues, and operating costs in these entities were evaluated (Table 4).

Over 80% of survey respondents did not change the number of employees. At the same time, most surveyed companies declared the decrease in sales revenues and the increase in operating costs caused by the COVID-19 pandemic.

Next, an in-depth analysis was conducted using the GEE method. Entrepreneurs were asked about the business changes during the pandemic in three areas: market orientation, key suppliers, and key customers.

Table 5 indicates that 72 enterprises (48.0%) changed their market orientation changes of key suppliers in 63 enterprises (42.0%) and changes of key customers in 105 enterprises (70.0%).

TABLE 4. Effect of the COVID-19 pandemic on general features determining high-growth enterprises

	Number of employees		Sales revenues		Operating costs	
	n	%	n	%	n	%
No change	124	82.67	48	32.00	56	37.33
Increase	5	3.33	3	2.00	94	62.67
Decrease	21	14.00	99	66.00	00	0.00

SOURCE: Authors.

TABLE 5. Business change during the pandemic related to market orientation, key suppliers, and key customers

Change	Market orientation		Key suppliers		Key customers	
	N	%	N	%	N	%
No change	78	52.0	87	58.0	45	30.0
Diversification	64	42.7	55	36.7	99	66.0
General change	8	5.3	8	5.3	6	4.0
Total	150	100	150	100	150	100

SOURCE: Authors.

TABLE 6. Changes in revenue

	Survey I		Survey II		Wald	df	p
	N	%	N	%			
Key customer	117	78.0	110	73.3	7.30	1	0.007
Majority of revenues from a key market industry	121	80.7	131	87.3	10.49	1	0.001

SOURCE: Authors.

NOTE: N – number of companies; % – sample percentage; Wald – the value of the test of analyzed main effect; df – number of degrees of freedom; p – statistical significance.

The following analysis is related to the significance of result changes between the two surveys and interactions with the change drivers. Table 6 presents the distribution of the number of enterprises with a key customer and enterprises that earned the most revenues from a key market industry, along with the values of tests of the leading change effects between the subsequent surveys.

While considering the factors of having a key customer and earning revenues from a key market industry, it was found that there were statistically significantly fewer enterprises with a key customer in the second survey. Moreover, in the second survey, statistically, significantly more enterprises earned the majority of revenues from a key market industry.

TABLE 7. Values of interaction effects between the change drivers and factors related to revenue changes

Revenue changes	Change drivers								
	Market orientation			Key supplier			Key customer		
	Wald	df	p	Wald	df	p	Wald	df	p
Key customer	0.01	1	0.941	7.38	1	0.007	7.34	1	0.007
Majority of revenues from a key market industry	0.61	1	0.436	10.5	1	0.001	10.52	1	0.001

SOURCE: Authors.

NOTE: Wald – value of the test of analyzed interaction effect; df – number of degrees of freedom; p – statistical significance.

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TABLE 8. Changes in factors of the group of business unification in enterprises, including change drivers

Change drivers	Critical factors	Yes		No	
		Survey I	Survey II	Survey I	Survey II
Changes in key suppliers	Possessing a key customer	89.3%	89.3%	75.4%	69.7%
	Majority of revenues from a key market industry	18.9%	10.7%	21.4%	21.4%
Changes in key customers	Possessing a key customer	88.2%	88.2%	76.7%	71.4%
	Majority of revenues from a key market industry	19.5%	12.0%	17.6%	17.6%

SOURCE: Authors.

Analysis of interaction effects between the change drivers and factors related to revenue changes indicates that both factors were statistically significant in the case of possessing a key supplier and a key customer. Statistically significant interaction effects were obtained between introducing changes in the area of key supplier and key customer and changes between the first and the second surveys covering the areas of having a key customer and earning the majority of revenues from a key market industry (Table 7).

Based on the parameter estimation, it was found that (Table 8):

- In the second survey, there were fewer enterprises with a key customer, but it only related to those enterprises that did not introduce changes in the area of a key supplier, OR=0.75, p<0.01;
- No changes between the first and the second surveys were found for enterprises that implemented changes in the area of a key supplier, OR=1.00;
- In the second survey, there were fewer enter-

prises with a key customer, but it only related to those enterprises that did not introduce changes of a key customer, OR=0.76, p<0.01;

- There were no changes between the first and the second surveys found for enterprises that implemented changes of key customers, OR=1.00;
- In the second survey less, enterprises that implemented changes in key suppliers indicated that the majority of their revenues came from a key market industry, OR=0.51, p<0.001;
- On the contrary, no differences were observed in enterprises that did not introduce changes in the area of a key supplier, OR=1.00;
- In the second survey, fewer enterprises that implemented changes of key customers indicated that the majority of their revenues came from a key market industry, OR=0.56, p<0.001;
- No differences were observed in enterprises that did not introduce changes in key customers, OR=1.00;

TABLE 9. Means of the number of key customers concerning change drivers

Change drivers	Critical factors	Yes		No	
		Survey I	Survey II	Survey I	Survey II
Changes in key suppliers	Number of key customers	3.84	4.80	4.39	4.34
Changes in key customers	Number of key customers	3.80	5.0	4.34	4.36

SOURCE: Authors.

TABLE 10. Means of ranks attributed to features in relations with the key supplier

Features in relations with the key supplier	Survey I		Survey II		Wald	df	p
	M	SD	M	SD			
Timely order processing	3.72	1.12	3.67	1.22	0.15	1	0.702
Favorable payment terms	3.47	1.06	2.57	1.07	54.71	1	0.001
Product/service quality	4.32	0.98	3.94	1.01	30.79	1	0.001
Product/service availability	2.56	0.95	3.51	1.10	55.46	1	0.001
Quality of order processing	2.28	1.20	1.31	0.73	57.89	1	0.001

SOURCE: Author.

NOTE: M – mean; SD – standard deviation; Wald – value of the test of analyzed main effect; df – number of degrees of freedom; p – statistical significance

In addition, the analyzes allowed for the number of key customers of high-growth enterprises (Table 9). There was no statistically significant main effect of changes between the first and the second surveys in terms of the number of key customers found, Wald(1)=1.29, $p>0.05$. Also, there was no statistically significant interaction between introducing changes in the area of market orientation and the change in the number of key customers between the first and the second surveys observed, Wald(1)=2.08, $p>0.05$. However, statistically significant interaction effects were observed between changes in the number of key customers in the first and the second surveys and the introduction of changes in the area of key suppliers, Wald(1)=6.40, $p<0.05$, and in the area of a key customer, Wald(1)=4.32, $p<0.05$. It was found that there was a statistically significant increase in the number of key customers only in enterprises that implemented changes of key suppliers, $B=1.01$, $p<0.05$. It was found that there was a statistically significant increase in the number of key customers only in enterprises that implemented changes in the area of key customers, $B=1.19$, $p<0.05$.

The second group of analyzed factors featured key suppliers. The means of ranks attributed to those features in both surveys were presented, and the values of the test of the main effect for changes between the first and the second surveys were shown (Table 11). Ranks were coded so that placing a factor in the highest position was awarded 5 points, while placing a factor in the lowest position – with 1 point. It was found that the importance assigned to favorable payment terms, product/service quality, and the quality of order handling in the second survey were statistically significantly lower than in the first survey. On the other hand, the importance assigned to product/service availability was statistically significantly higher in the second survey.

Next, values of interaction effects between introducing changes in market orientation, key supplier, and key customer and changes between two subsequent surveys regarding the importance assigned to features in relations with key suppliers were presented.

TABLE 11. Values of interaction effects between the change drivers and factors related to key supplier relationship

Features in relations with key supplier	Change drivers								
	Market orientation			Key supplier			Key customer		
	Wald	df	p	Wald	df	p	Wald	df	p
Timely order processing	0.06	1	0.814	1.08	1	0.300	2.17	1	0.141
Favorable payment terms	0.40	1	0.530	0.44	1	0.506	0.16	1	0.690
Product/service quality	6.40	1	0.011	0.79	1	0.376	0.01	1	0.909
Product/service availability	0.01	1	0.964	0.09	1	0.762	0.42	1	0.517
Quality of order processing	0.50	1	0.482	0.16	1	0.692	0.09	1	0.765

SOURCE: Authors.

NOTE: Wald – value of the test of analyzed interaction effect; df – number of degrees of freedom; p – statistical significance.

TABLE 12. Changes in the evaluation of the importance of product/service quality in enterprises, including the change drivers

Change driver	Critical factor	Yes		No	
		Survey I	Survey II	Survey I	Survey II
Change of market orientation	Product/service quality	4.40	3.82	4.26	4.05

SOURCE: Authors.

Table 13. Individual resource category means

Resource Category	Survey I		Survey II		Wald	df	p
	M	SD	M	SD			
Technology resources	35.67	9.94	37.43	9.76	13.49	1	0.001
Human resources	34.10	9.14	30.47	9.58	31.62	1	0.001
Other intangible resources	10.77	11.24	11.10	10.34	0.67	1	0.413
Financial resources	19.47	7.64	21.00	8.17	9.37	1	0.002

SOURCE: Authors.

NOTE: M – mean; SD – standard deviation; Wald – value of the test of analyzed main effect; df – number of degrees of freedom; p – statistical significance.

A statistically significant interaction was observed between the introduction of changes in market orientation and the change in the importance assigned to product/service quality. The effect of reducing the importance of product/service quality was stronger in enterprises implementing a change of

market orientation, OR=3.51, p<0.001, than in enterprises that did not introduces changes in the area of market orientation (Table 12), OR=1.62, p<0.01.

Table 13 presents the percentages assigned to resources crucial for producing key products/services in the first and second surveys. The summary was

TABLE 14. Values of interaction effects between the change drivers and the assessment of resource categories

Resource category	Change drivers								
	Market orientation			Key supplier			Key customer		
	Wald	df	p	Wald	df	p	Wald	df	p
Technology resources	0.04	1	0.841	0.04	1	0.841	0.16	1	0.687
Human resources	0.20	1	0.653	0.82	1	0.364	14.07	1	0.001
Other intangible resources	0.39	1	0.534	0.02	1	0.878	5.46	1	0.019
Financial resources	0.02	1	0.902	1.23	1	0.268	1.91	1	0.167

SOURCE: Authors.

NOTE: Wald – value of the test of analyzed interaction effect; df – number of degrees of freedom; p – statistical significance.

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TABLE 15. Means of significant factors related to company resources, including the change drivers

Change drivers	Resources	Yes		No	
		Survey I	Survey II	Survey I	Survey II
Change of key customers	Human resources	38.54%	29.71%	33.57%	30.56%
	Other intangible resources	6.47%	9.12%	11.32%	11.35%

SOURCE: Authors.

supplemented with the test values of the main effect for changes between the first and the second surveys.

It was found that the importance assigned to technology resources and financial resources was statistically significantly higher in the second survey. The importance assigned to human resources was statistically significantly lower in the second survey.

The analysis of the values of interaction effects between the change drivers and factors related to resource category assessment indicates statistically significant interaction effects between the introduction of changes in the area of key customers and the change in the importance assigned to human resources and other intangible resources (Table 14).

In addition, it was observed that the importance of human resources was assessed as lower in the second survey. Still, this effect was stronger in enterprises implementing changes of key customers, $B=-8.53$, $p<0.001$, than in enterprises that did not introduce such changes, $B=-3.01$, $p<0.001$. The importance of other intangible resources in the second survey was higher than in the first. However, this effect was sta-

tistically significant only in enterprises implementing changes of key customers, $B=2.65$, $p<0.05$. On the other hand, no difference between the first and the second surveys was found in enterprises that did not introduce such changes, $B=0.04$, $p>0.05$ (Table 15).

Table 16 presents the percentages assigned to resources crucial for producing key products/services in the first and second surveys. The summary was supplemented with the test values of the main effect for changes between the first and the second surveys.

It was found that the importance assigned to technology resources and financial resources was statistically significantly higher in the second survey. The importance assigned to human resources was statistically significantly lower in the second survey.

Table 17 shows the means of ranks assigned to the types of intangible resources in the first and second surveys. The summary was supplemented with the values of the main effect test for changes between the surveys. Ranks were coded so that placing a factor in the highest position was awarded 7 points, while placing in the lowest position – with 1 point.

TABLE 16. Resource rank means considered critical for key product/service delivery

Resource Category	Survey I		Survey II		Wald	df	P
	M	SD	M	SD			
Technology resources	35.67	9.94	37.43	9.76	13.49	1	0.001
Human resources	34.10	9.14	30.47	9.58	31.62	1	0.001
Other intangible resources	10.77	11.24	11.10	10.34	0.67	1	0.413
Financial resources	19.47	7.64	21.00	8.17	9.37	1	0.002

SOURCE: Authors.

NOTE: M – mean; SD – standard deviation; Wald – value of the test of analyzed main effect; df – number of degrees of freedom; p – statistical significance.

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TABLE 17. Intangible resources rank means

Type of intangible resources	Survey I		Survey II		Wald	df	p
	M	SD	M	SD			
Human capital	6.17	0.98	5.79	1.18	6.07	1	0.014
Organizational capital	5.49	0.97	4.94	1.24	11.62	1	0.001
Intellectual property	5.23	1.58	4.89	1.76	1.39	1	0.239
Key competencies	5.84	1.18	5.03	1.29	13.28	1	0.001
Relations	4.77	1.38	4.07	1.51	5.69	1	0.017
Employee attitudes and behavior	5.28	1.74	4.84	1.67	2.4	1	0.121
Positional resources	5.64	1.55	5.56	1.78	0.03	1	0.860

SOURCE: Authors.

NOTE: M – mean; SD – standard deviation; Wald – value of the test of analyzed main effect; df – number of degrees of freedom; p – statistical significance.

TABLE 18. Values of interaction effects between the change drivers and the assessment of intangible resources

Type of intangible resources	Change drivers								
	Market orientation			Key supplier			Key customer		
	Wald	df	p	Wald	df	p	Wald	df	p
Human capital	0.15	1	0.703	0.34	1	0.560	0.16	1	0.694
Organizational capital	0.23	1	0.629	0.10	1	0.754	0.07	1	0.796
Intellectual property	1.84	1	0.174	3.85	1	0.050	4.26	1	0.039
Key competencies	0.37	1	0.544	0.35	1	0.554	0.01	1	0.932
Relations	0.07	1	0.793	1.27	1	0.259	3.71	1	0.054
Employee attitudes and behavior	6.63	1	0.010	3.46	1	0.063	1.95	1	0.163
Positional resources	0.38	1	0.540	0.11	1	0.739	0.38	1	0.537

SOURCE: Authors.

NOTE: Wald – value of the test of analyzed interaction effect; df – number of degrees of freedom; p – statistical significance.

TABLE 19. Means of significant factors related to intangible resources, including the change drivers

Change drivers	Intangible resources	Yes		No	
		Survey I	Survey II	Survey I	Survey II
Change of key suppliers	Intellectual property	5.38	4.0	5.21	5.09
Change of key customer	Intellectual property	6.0	3.33	5.18	5.05
Change of market orientation	Employee attitudes and behavior	6.20	4.88	4.48	4.81

SOURCE: Authors.

The importance assigned to human capital, organizational capital, key competencies, and relations in the second survey was statistically significantly lower than in the first survey.

Analyzing the values of interaction effects between the change drivers and factors related to the assessment of intangible resources highlights three statistically significant relationships. Statistically significant interaction effects were observed between:

- introducing changes in market orientation and a change in the importance assigned to employee attitudes and behavior,
- introducing changes in key suppliers and customers and a change in the importance assigned to intellectual property.

Statistically significant interaction effects between the introduction of changes in market orientation and the change in the importance assigned to employee attitudes and behavior, as well as between introducing changes of key suppliers and customers and the change in the importance assigned to intellectual property, were obtained (Table 19). It was found that the importance assigned to employee attitudes and behavior was lower in the second survey only in enterprises that implemented changes in market orientation, $OR=0.22$, $p<0.05$. No statistically significant effects between the first and the second surveys were observed in enterprises that did not introduce such changes, $OR=1.45$, $p>0.05$.

The importance assigned to intellectual property was lower in the second survey only in enterprises that implemented changes of key suppliers, $OR=0.18$, $p<0.05$. On the other hand, no statistically significant difference between the first and the second surveys was found in enterprises that did not introduce such changes, $OR=0.91$, $p>0.05$. The importance assigned to intellectual property was lower in the second survey only in enterprises that implemented changes of key customers, $OR=0.07$, $p<0.05$. Enterprises that did not introduce such changes were not observed, with statistically significant differences between the first and the second surveys, $OR=0.81$, $p>0.05$.

5. CONCLUSION

The impact of the global crisis caused by the COVID-19 pandemic was a huge business challenge. The analysis of how business actors adapted to the pandemic situation has been addressed more than once in academic publications in the context of adapting business and market models (Peñarroya-Farell, & Miralles, 2022), the impact on family businesses (Le Breton-Miller, & Miller, 2022) or the changing role of innovation (Sharma et al. 2022). Our study adds to previous analyses by looking at the unexplored context of the impact of the COVID-19 pandemic on high-growth enterprises.

In the summary of selected responses and business conditions of HGEs in Poland after the third wave of the COVID-19 pandemic, a distinct effect of the pandemic on studied entities can be indicated. It mainly concerns the limitation or stagnation of market opportunities. A very small percentage of HGEs declared an increase in the distinguished activities, i.e., the number of products and services, the availability of material resources from the suppliers, external financial resources, collecting funds, and implementing development investments.

The COVID-19 pandemic did not cause a rapid reduction in employment in high-growth enterprises. One of the reasons for this may be identified as the significant use of preferential financing under PFR Financial Shield by HGEs while financing their activities, which required the maintenance of the previous level of employment.

Analyzing high-growth enterprises in four relevant factor groups indicates actions to limit business risk. The most visible is the HGE diversification by introducing diversification through the changes of key suppliers, key customers, and market orientation, a typical strategy used to limit risk. A similar conclusion may be drawn when analyzing factors related to the key suppliers, where orientation toward product/service availability is visible. This results from disrupted supply chains caused by lockdowns and production reductions during the pandemic. A rational approach

to resource management can be observed. Human resources' importance decreased, while closer attention was paid to technological and financial resources. Reductions in production and disruptions in labor markets decreased the demand for human resources. It should be emphasized that the adaptive abilities and the speed of actions allowed 83% of studied entities to keep their HGE status.

The research only referred to the response of

high-growth enterprises to the effects of the COVID-19 pandemic. However, the current situation in which business entities are still volatile and uncertain is caused by factors beyond the pandemic of a macroeconomic or geopolitical nature. Considering the distinguishing features of HGEs, i.e., growth in employment or growth in sales revenue, it is worth observing their response to the new challenges of a turbulent environment.

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ODGOVOR VISOKORASTUĆIH PODUZEĆA NA KRIZE IZAZVANE PANDEMIJOM COVID-19

26

SAŽETAK

Glavni cilj ovog rada je procjena odgovora visoko rastućih poduzeća na okolnosti uzrokovane pandemijom COVID-19. Načini na koje su se poduzeća prilagodila pandemijskoj situaciji predstavljali su veliki poslovni izazov za njih. Sposobnost donošenja dobre prosudbe utječe na racionalno odlučivanje i prilagodbu okolnostima. Istraživanje prihvaća perspektivu situacijske teorije i odnosi se na visoko rastuća poduzeća (VRP). Podaci su prikupljeni dvaput, prvi put početkom 2019. godine, a drugi put nakon trećeg vala pandemije COVID-19, u listopadu 2021. godine. Metoda općih jednadžbi procjenjivanja (Generalized Estimating Equations) korištena je za analizu uzorka od 150 poljskih VRP-ova. Rezultati su pokazali da je utjecaj pandemije na analizirane subjekte uglavnom bio povezan sa smanjenjem ili stagnacijom tržišnih prilika. Važnost ljudskih resursa smanjila se u korist tehnoloških i financijskih resursa. Nadalje, većina anketiranih poduzeća je uspjela zadržati svoj status VRP-a.

KLJUČNE RIJEČI: *kontingencijska teorija, visokorastuća poduzeća, pandemija COVID-19, opće jednadžbe procjenjivanja*