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Strategy and sustainable business development: Dynamic hazard or dynamic mania? Lessons learned from a crisis

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Abstract

Turbulent times bring about not only new technologies but also well-skilled people without even minimum business knowledge, who use only their specialized potential in business practice. How can one utilize the fundamental planning pillars within businesses when the behavior itself is not predicable? What interactions support the dynamics and adaptability of the business in a positive way? Can different types of stakeholders (or other factors such as the business age or interconnections) shed light on developing a better understanding of strategy making in different areas of business? The proposed model incorporates dynamic behavior and shows how manipulating certain items can alter outcomes in the strategic system in a predicable way. As a contribution to the literature, the paper will highlight who has the biggest influence on the flexibility of business and which items are the most important for strategy making in an uncertain and turbulent environment. The main goal of this paper is, based on the literature review, to provide a practical model of adaptation. In this context, the study begins by a literature review of strategy evaluation and possible measurement of success. Research methodology, analyses results and the research model will be dealt with in the second section. The results of the analyses will be discussed and a recommendation will be provided in the last section. Finally, the model of dynamic entrepreneurship is presented with a combination of final effectiveness strategy evaluation tools.

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Keywords: Crisis behaviour; Dynamic mania; Dynamic effects; Survival ratio

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1. Introduction

Changes in the business environment along with innovation procedures bring about new situations that need to be solved not just effectively and with care but in an original way and finally, with added value for the customer. Strategy preparation and the measurement of its effectiveness is very difficult and brings about certain dilemmas – which variables are dependent on each part of the business plan, whether the selected variables have an impact only on the goal of the company – artificially trying to appear like a target, or they are real, measurable and objective values. In attempting to construct a model of strategic behavior, a number of challenging questions immediately arise. Firms often do not actively respond to changes in the external environment due to their dependence on necessary business resources, they are more likely to behave in an opposing manner in order to survive in the market. Another possibility of measuring the effectiveness of a strategy is to use economic indicators. Internal strategic effectiveness could be represented by financial analysis tools and budgeting, especially cost benefit analysis, cost effectiveness (to provide the maximum effect, with ICT support) and threshold spending (obtained directly from the cost-effectiveness measurement).

2. Literature Review and Hypotheses

2.1. Strategy in turbulent times

Many research groups see a business unit only as an element of the market, coping with its situation by applying its own strategy and a destructive approach to innovation, based on Schumpeter and his followers. Few people actually think about the relationship between strategy, goals and decision-making inside an organization or the relationship between managers and owners, who actually attend to routine work and duties. Recent literature and research studies focus significantly on measuring turbulence in the industry (Baptista and Thurik, 2007; Stacey, Griffin, and Shaw, 2000) based on the start up and exit rate of emerging companies and the relationship between GDP growth and company ownership (Carree and Thurik, 2008; Močnik, 2009). The last few decades brought more opportunities to use strategic and creative thinking and its flexible implementation on market failures, which come not only from final customers but from threats within new technologies and these factors together apply pressure on adaptable business behavior (Evans, 1991; Grewal and Tansuhaj, 2001; Drucker, 2008). Turbulence in the business environment could be defined according to Babtista and Karaöze (2007) as a developmental process, where organizations are depicted in the market in two ways: (1) New organizations coming into the market to fill the gap created by companies, which closed down or were in crisis because of the strategy of displacement, (2) New competitors appearing when a “niche” arises in the old market and this behavior replaces the power of the main competitors in the market.

Therefore, an analysis of the strategic elasticity of small and medium-sized businesses could help to find an answer to the question of how this business segment could deal with challenges from the external environment and what type of strategies they might use to achieve their goals. It is anticipated that the research findings will illuminate the definition by Krupski (2005), who described elasticity in four dimensions as: (1) reactive, (2) adaptive, (3) defensive, and (4) creative attributes of the strategy of an observed firm. The main barriers to the effectiveness of strategy implementation can be named as (Kaplan, Strnad, 2009):

- Barrier to vision – only 5% of employees understand what the strategy means
- Barrier to human resources – only 25 % of managers have personnel motivation connected with business strategy

- Barrier to managers or owners – 85 % of them dedicate no more than one hour per month to improving or discussing changes in this document
- Barrier to resources – 60 % of business units do not have a connection between budget and strategy.

This brings about weak results in strategy implementation and the adaptability process; we should call it a dynamic hazard, because 90% of businesses cannot realize their goals according their vision. It means that they learned lessons from their business strategy fails. Since the manager is an agent of a business and not a passive observer (Stacey, Griffin, Shaw, 2000), he is required to develop a strategy. This approach can be expanded with the resource-based approach of managing a firm (Barney, 1991) by adding components of knowledge to provide strategic flexibility. This approach will allow businesses to be proactive with regard to market risk and to construct their own model of behavior under the four pillars of crisis strategic behavior - marketing, financial, personnel and plan of supply of services as scenarios (Barney, 1991; Krupski, 2005). The successfulness of each strategy depends on behavioral models, but all models need the below stated four significant steps (Tidd at al., 2007, Rylková, Chobotová, 2011): (1) Copy main goals from strategy, (2) Effective internal and external linkage with other subjects on the market, (3) Support for conducting changes in an organization, (4) Supportive environment.

Practice in the business area allows becoming familiar with problems and avoiding a turbulent and non-dynamic decisional spiral. Traditional models of skills cover only a few variables such as the structure of an organization, climate, processes and leadership without dynamic points such as the behavior of other elements (Burke and Litwin, 1992; Damanpour, 1991; Kimberly and Cook, 2008). Equations are often used to evaluate strategy structure models and to describe dependent values in strategy behavior or to describe successful business theories. We should mention the research of managerial choices and strategy components in reaction to the external environment as equations (Bourgeois, 1984). Others connect strategy positions and business performance in one equation. His evaluation and models are especially developed for industrial organizations, (Keeley, Roure, 1990). This evaluation opens up areas for social innovation (socially desired effect for customers, society) in strategic behavior. In theory, we should imagine their dynamics as the relationship between one resource and another which produces the same effect as an equal relationship between other combinations, because we use them equally. We should imagine the combination of the relationships between factors as in the Bernoulli mathematical spiral of development. This imaginative picture explains the relationship between triangle tops, represented by strategic pillars and these tops are connected by one spiral. The optimal ratio between vertices, represented by the distance from A to B and B to C is named φ, with the value of 0.618 (Häuser, 2007), for strategy optimization, the value means the dynamics of resources used for sustainable development in each group.

2.2. Business models

Research on the influence of the attribute of competency on the adoption and use of innovation usually suffers from a variety of measured issues. In these types of organizations there are well positioned highly skilled people, but the result of learning by innovation or knowledge activities is very limited. Strategy preparation and the measurement of its effectiveness is very difficult and brings about certain dilemmas – which variables are dependent on each part of the business plan, whether the selected variables have an impact only on the desire of the company – as if artificial, trying to look like a target, or they are real measurable and objective values. Firms often do not actively respond to changes in the external environment due to their dependence on attractive resources, more likely they will confront compliance in order to make something less necessary. Turbulent times bring about not only new technologies but well-

informed people, who use their potential in business practice. They create their own business repertoire which causes dynamic behavior in the market on any level of the organization. In particular these tendencies are observed in the area of services such as banking, professional services and legal services, which require consistency and conformity (Dobni et al, 2001).

In the relevant literature we should find significant models, based on empirical studies, which describe dynamic factors to protect business from uncertainty and a crisis environment. The most used business models for the performance of firms are the – **SSP model** (strategy-structure-performance model); **SCP model** (strategy-conduct-performance model) and **RBV model** (resource-based view model) as a response for interaction between company, environment and performance (Lo, 2012). The *SSP model* suggest that strategy, followed by organizational change would bring about a dynamic response to a changing environment, other factors such as resource allocations and leadership style are determined by long term goals and the proper type of strategy (Chandler, 1962; Ansoff, 1965). Other scholars add the influence of the external environment to balance resources for strategy success (Pfeffer and Salanick, 1978). The *SCP model* was developed by Porter and is based on industrial structure, the behavior of a firm in the market and its bargaining power (the model is academically known as "Porter's five forces"; Porter, 1980). The *RBV model*, presented by Barney (1991) proposes a combination of internal resources as a competitive advantage of the company.The difference in responding to the business environment and the self interests of companies brings about constraints on being dynamic. Many companies have as the main goal for their future not innovation, but merely survival. Green (1977), divides strategy effectiveness into five effects which were primarily used for education strategy evaluation, but, when used as a normal trend inasmuch that all business are learning organizations, this approach is very suitable and analogically could be added to modern managerial trends.

This approach divides final effectiveness into:(1) *Sleeper effect* (delay of impact) if the effect is measured only as the difference before and after the change process and the final effect could be greater because of the re-engineering of the main process, new activities and innovations. This approach was used as a model for factors influencing strategic behavior. (2) *Backsliding effect* (delay of impact), if the dynamics is measured after the project, on-going process, so the deviation from the plan and the final effect is near zero. (3) *Trigger effect* (borrowing from the future), businesses are prepared for some problems due to their area of business and internal and external procedures and they improve their leadership, strategy and goals. It appears to be similar for business plan preparation according to market analysis, price analysis, customer analysis and other factors. (4) *Historical effects* (adjusting for cyclical trends), for the compilation of strategy dynamics businesses use customer segmentation and price diversification to spread the risk. It is practical to first see the partial effect of dynamic decision making on observed groups and after that it should be used as a strategy as a whole. (5) *Contrast effect* (treatment effect), the plan and the implementation do not join together in the future. *According to Krupski (2005) and Green (1977),* there are in the paper, specific tasks to solve: (1) What dynamic behavior do small businesses have and how well are they prepared for crisis situations? (2) Green specified five types of strategy effect – which of these should we find in the strategic behavior of small businesses? Different points of view on dynamic response based on a review of earlier literature leads to formulating an initial hypothesis (factor analysis tested) for conducting research on integrating these dilemmas into research (1) Hypothesis 1: Crisis survival will not be influenced by the age of the company; (2) Hypothesis 2: Crisis survival will be influenced by investment in innovation. (3) Hypothesis 3: Crisis survival will be influenced by a qualified work force.

3. Methodology

In this survey we aim to identify the effect of investment on innovation, strategy preparation and the relationship between financial ratios and the performance of the firm. To test the propositions, a field survey using questionnaires was conducted. The questionnaire survey was conducted with owners and managers of small and medium size businesses in the Czech Republic (under 250 employees) operating between the years of 2008-2010. The firms fulfilled the criteria of (1) being designated as small and medium sized companies by their number of employees – fewer than 250, and (2) agreeing to a personal visit. The questionnaire had six sections to describe dynamic factors, which influence company behavior; these were strategy performance, crisis and risk management, personnel policy, production and innovation, grants and supporting policy and environmental policy. Data obtained from questionnaires (663 companies) will be analyzed through the SPSS statistical packet program. Companies was divided by size (self employed – 13%, till 20 – 50.7%, 21 to 50 – 16.6., 51-100- 7.8%, 101-250 – 5.1% and 250+ - 6.8%) The analysis is based on statistical data analysis of multidimensional statistic methods in the qualitative research area, using Principal Components Analysis (PCA). All collected data were processed in SPSS for Windows, ver. 18. To achieve more sophisticated results and to identify dominant tendencies, we used PCA with a VARIMAX rotation (factor loading minimization); the applicability of data was examined by Bartlett's test of sphericity with the values of the presented results being under $P<0.05$ and for all of the data we used the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) with a recommended minimum value of 0.6 (Sharma, 1996). We obtained 38 items in seven different sections to be compared, which should be used as a platform for business model as follows (table 3):Identity (I); Strategy management (S); Crisis and risk management (C); Personnel policy (P); Innovations and Production (IP); Grants and Projects (G); Environmental policy (E).

Results were graded using a Likert scale (1-5 for non-numerical data) so as to be comparable with other sections of the questionnaire (61 items). Next, factor analysis was used to obtain a group of adaptability factors. As a supporting analysis, cross-tabs were used to identify significant and non-significant values. The aim of these comparisons was to identify differences in adaptability factors between high - and low-strategy developed organizations and to explore how specialization in a business context influences the specific strategic approaches taken, by their ability to be adaptable. In the next stage we provide analysis of data reliability, presented by Cronbach α and with a recommended value above 0.5 (Nunnally, 1978), other items were deleted. The analysis was used so as to be able to answer questions about dynamic strategy (finally 38 items, see table 2).

Table 1. Cronbach Alpha Values

Section in Questionnaire	Original number of items	Number of items for next step	Cronbach Alpha
Identity of Company	11	5	0.6536
Strategy management	9	6	0.7234
Crisis and Risk management	11	10	0.6842
Personnel Policy	7	6	0.5212
Innovations	9	5	0.5633
Grants and project	8	4	0.6033
Environmental policy	6	2	0.5772
Total	**61**	**38**	

4. Models of business behavior

The practical contribution of this research is how company performance and sustainability is determined by the business owner's approach to strategy. It was the reason why the results were evaluated from two points of view (based on previous literature studies) – the mania and the hazard.

4.1. Dynamic mania model

Firstly, the sustainability in an uncertain environment is determined particularly by the mission and vision of the company, which was created by the business owner or management board. The best expression to describe their behavior in the market place is business "mania". Their dynamic behavior is connected with all of the factors from the questionnaire. We used the multi-stage factorial analysis. In three step modeling we obtained the appropriate combination of factors (in each step the factors with a VARIMAX rotation under 0.6 were deleted) with a total variance explained as 64.76% (KMO = 0.771, Barlett's test of Sphericity; Chi–Square -3629.81, df =190 sig. 0.000). An extraction of these factors divides the dynamic mania model into seven groups (in the first stage 11 components were extracted, table 3).

Table 2 Component Matrix Values

	Financial performance	Crisis and risk management	Investments for Innovations	Environmental policy	Strategy management	Personal policy	Project management (cooperation)
Component	F1	F2	F3	F4	F5	F6	F7
C1 Turnover 2005-2010	0.878						
C3 Profit 2005-2010	0.836						
C4 Investments 2005-2010	0.715						
E3 Change In Quantity 2005-2010	0.659						
C2 Cost 2005-2010	0.644						
C5 Life Cycle 2005-2010	0.614						
C8 Crisis Plan 2005-2010		0.886					
C7 Risk Analysis		0.852					
C10 Practical Use of crisis plan		0.819					
E4 Percentage Of Turnover For Innovation 2005-2010			0.791				
E5 Percentage Of Turnover For R & D 2005-2010			0.770				
E7 Percentage Of Turnover /share of Innov.Products 2005-2010			0.764				
G2 Energetic Reduction 2005-2010				0.836			
G1 Energetic Audit 2005-2010				0.788			
B3 Strat_Framework 2005-2010					0.856		
B1 Form of strategy document 2005-2010					0.730		
D4 Back-Hiring Employees 2005-2010						0.781	
D2 Hours Change in work/per week in crisis 2005-2010						0.709	
F3 Partner Or Subject of project EU/other 2005-2010							0.920

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

We can find the main area of this model in the area of financial performance (factor 1), with the highest number of components, but in summarization, the ratio, is not as statistically important as factor 6 "strategy form". A full list of regression coefficients (for each respondent) was saved for future use to fit a general model in order to explain causality between the research variables. To obtain a model of dynamic mania we used Barlett's factor scores saved from each analysis to produce scores which were like true factors and presented high quality estimates (DiStefano et al, 2009). For each company this

factor score was computed and then we measured the frequency and distribution. The value of the "*mode*" was used as a general weighted value for each factor in the research sample in the model – to be suitable for all situations (table 4).

Table 3 General description of Barlett's regression Factors

	Financial performance (6 items)	Crisis and risk management (3 items)	Investments for Innovations (3 items)	Environmental policy (2 items)	Strategy management (2 items)	Personal policy (2 items)	Project management (cooperation, support, 1 item)
Mode	**-.311**	**-.636**	**-.490**	**-.610**	**-.730**	**-.861**	**.362**
Skewness	-.457	1.58	.686	.960	.055	1.473	-.426
Kurtosis	.059	1.27	.794	-.099	-.528	1.80	-1.12

This general equation describes the causal relationship between managerial decisions in a crisis environment as the General Sustainability ratio (GSR) and it is based on (according to previous factorial analysis) this equation:

$$|GSR|_{max} = 0.362 \times F_7 - 0.311 \times F_1 - 0.636 \times F_2 - 0.49 \times F_3 - 0.61 \times F_4 - 0.73 \times F_5 - 0.86 \times F_6 \quad (1)$$

The General Survival Ratio (GSR) represents the value of total adaptability, computed from an equation (values for the factors F1-F6 were from the Likert scale). The recommended rate is the maximum of the ratio in an absolute value, so the span of the ratio is <3.275; 16.375>. Only one positive linkage was established – external support is needed to eliminate external risk. If Investments into research and development as well as innovation are positive factors for the future (Tidd, 2007), but they bring a higher level of risk. The owner must give preference to long-term planning due to the investment involved. The financial area means, that higher rates signal problems with standard financial ratios. we divide these regression coefficients as a percentage share of the total score, we find that 7.7% of sustainability is based on financial rationale, 15.7% on risk and crisis decisions, 12.3% can be attributed to innovation activities, 15.3 % is the important area of "green" behavior - environmental policy; the rest is cooperation within grants and projects (9%). A significant part, which we could call the "core of dynamic mania" of each company, is personnel policy (21.65%). In many cases it is mentioned as social capital development. It is a source of change and dynamic behavior (Charney and Libecap, 2000). Due to a negative strategy management relationship the ***SSP business model was not supported***.

4.2. Dynamic hazard model

Secondly, each company is connected with business risk. A suitable word for the evaluation of this part was "hazard" regarding the future of the company. We employed a two-step factor analysis model to achieve the minimum number of factors with a high level of variance explained by this type of model. The first step placed the emphasis on risk and crisis behavior to solve the problem of the dynamic hazard of companies.

The items, which were extracted as communalities and had the loading below 0.6, were deleted in each step. initial factor. The total explained model variance is from 66.25% to 76.95%. The KMO test was still above 0.6 (KMO_1= 0.712 KMO_2=0.67), factors, which were obtained were five, then four (see Table 4)

Table 4. Component Matrix Values

	Extraction	Factor	Extraction	Factor

	Step 1	analysis 1	Step 2	analysis 2
A7 Size of Company	0.566	F2	**	
B1 Form of strategy document 2005-2010	0.489	*	N/A	
B4 Clear Goal of Strategy	0.457	*	N/A	
C1 Turnover 2005-2010	0.87	F3	0.885	F2
C3 Profit 2005-2010	0.876	F3	0.885	F2
C7 Risk Analysis	0.781	F1	0.792	F1
C8 Crisis Plan 2005-2010	0.814	F1	0.838	F1
C10 Practical Use of Crisis plan	0.683	F1	0.659	F1
D4 Back-Hiring Employees 2005-2010	0.338	*	N/A	
E4 Percentage Of Turnover For Innovation2005-2010	0.764	F4	0.754	F3
E5 Percentage Of Turnover For R & D 2005-2010	0.729	F4	0.747	F3
F1 Grants And Supporting Programs	0.686	F5	0.631	F4
F4 Employees Supported	0.462	*	N/A	
F3 Partner Or Subject	0.762	F5	0.735	F4

Extraction Method: Principal Component Analysis.p=.000; Barlett test of Sfericity-Chi-Square 1942.48 df=36; sig.0.00
*/** initial factor loading below 0.6, grey= new items in step 1, N/A not available

We used the same process to model scores for the hazard "value". In the first step it is necessary to remove the factor of the age and size of the company (due to the low correlation value), but many other studies widely use these variables in studies of the failure of companies not only in entrepreneurship but also in economics (Kosova and Lafontaine, 2010).

Table 5. General description of Barlett's regression Factors

	Crisis and risk management (3 items)	Financial performance (2 items)	Investments for Innovations (3 items)	Project management (cooperation, support, 2 items)
Mode	**-.573**	**-.023**	**-.548**	**.238**
Skewness	1.70	-.498	.960	.098
Kurtosis	1.43	-.308	1.65	-.943

The same expression is used for the hazard ratio (HR), but we recommend using the minimum rate of this factor to avoid risks. The span is <0.906; 4.53>. Factor analysis of all dependent variables, without control variables from set data led to the following simplified formula for dynamics behavior in turbulent environments:

$$Hazard\ ratio\ |HR|_{MIN} = 0.238 \times F_4 - 0.573 \times F_1 - 0.023 \times F_2 - 0.548 \times F_3 \qquad (2)$$

Finally, the survival ratio expresses the maximum difference between the GSR and HR, to explain the observation prognosis and non-financial value of the company <2.369; 11.849>.Using a comparison with the GSR ratio, where "risk activities", quite similar to factors F1 to F3 in HR have a total influence on dynamics (compare table 2 and 4), 35.7%, in hazard ratio importance of these three areas is confirmed: 41.4% of the hazard came from risk and crisis decisions, 1.6% financial rationale, 39.25% innovation

activities and 17.35% the positive influence of grants and projects. Negative values represent the indirect effect of managerial decisions. If we set the GSR ratio as a global index of the company mission, then we see this simple relationship:

Survival ratio (SR) min= GSR – HR *(3)*

Then we see the Survival ratio as the "**net effect**" of managerial decisions in the surveyed period. It could be used as a predictor of the probability of sustainability and continuity in the business. In comparison the factor of the pure survival effect makes up approximately 55.3% of the GSR ratio. Direct and indirect effects influencing the successfulness of strategy: (1) 9-17% of direct (but from the external environment) effects should be seen in the area of project activities from the top strategy as an organizational conception and cooperation, which is needed in a crisis situation to split the risk, (2) 91-83% of indirect effects (but from the internal environment) in the other activities, which are in harmony and provide the majority of the final effect. Using this equation, we are able to predict how long it takes to reorganize this unit as a whole. This survey used the SCP model (Porter's model) to prepare strategy and some indices support elements of the RBV philosophy. According to Krupski (2005) and Green (1977) the examined small business were mainly adaptive to a crisis environment, we were able only to observe the historical effects of their behavior. They did not try to use any creative activities. In a small part of the research sample we discovered the contrasting effects of their strategy. They mentioned growth and innovation and yet in the area financial they made losses (Pawliczek, Piszczur, 2011).

4.3. Limitations of the study and the further application of the research in innovation and risk management

The main purpose of this research was to support the well known fact, that small businesses, which developed a crisis plan or were innovative-oriented during unstable economic conditions, were more dynamical in their behaviour and were proactive in their strategy development as opposed to being merely reactive (Phillips, Kirchoff,1989). They created value for the company even during dire times for businesses. Secondly, factors, which generate sustainability in the long term period, should be evaluated as a supporting decision making tool, because they create a long-term competitive advantage in business. In line with our analysis, we supported the fact that innovations, made in a non-stable economic environment were risky and slowed down the flexibility of strategy implementation. Double changes, such as changes in innovations (in processes, services – as a part of a plan) and operative changes in strategy such as the reaction towards impulses from the external environment, speed up the growth of the risk rate. All of our work is limited by the intervals of company evaluation and the availability of data which is a common problem among other studies (von Stein, Ziegler, 1984), but further research must be conducted to improve the quality and predictive power of the presented models to avoid error. The practical value of the non-financial information regarding the correlation between significant factors for business success within innovation implementation is very important for predicting and evaluating current and potential situations and would be helpful when working with the causalities of failures in the SME sector, because each innovation process needs a good business plan and must be evaluated (Altman, et al, 2008).

5. Conclusion

In this survey three hypothesis were tested. Firstly, that survival in a crisis will not be influenced by the age of the company. As being demonstrated by factorial analysis, the age factor is not statistically

important for proactive company behaviour. Inter-item correlation analysis confirmed only a weak relationship between age and changes in the production plan (coefficient of correlation 0.448), with components not connected with a risk and crisis plan. So, the result of the factor analysis cannot support hypothesis 1. Secondly, that survival in a crisis will be influenced by an innovative approach from the company. This hypothesis was definitely supported by both models (mania model – 12.3% and hazard model - 39.25%), in both the innovative approach played a significant role in survival. But we must also mention the indirect relationship due to the negative regression coefficients. The final hypothesis placed the emphasis on a qualified work force. This hypothesis was supported by mania model (personnel policy, 21%). A common personnel solution during the crisis was the cutting of the working hours per week to protect the qualified work force and the second policy was reemploying employees when the business situation was more stable. In this case we should mention that our findings have limitations due to the current economic situation in the examined country, the personal feeling of the crisis situation in the company, evaluated by the business owner. But this survey should shed some light on how small companies deal with an economic crisis situation and how they split the risk between their activities. The dynamic mania model and dynamic hazard model are our own models which are arranged specifically to explain the causality between variables and place the emphasis on a significant part of strategy decisions.

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