

COVID-19 positivism: Has COVID-19 changed Hungarian entrepreneurs' perception of business opportunities?

Márton Gosztanyi *

* Budapest Business School, Budapest, Hungary. Correspondence: gosztanyi.marton@uni-bge.hu

Abstract: The study discusses the reasons why entrepreneurs in the semi-peripheral country of Hungary see a positive and new opportunity in COVID-19. The study is about the factors that determine entrepreneurs' ideas about starting a new business as a result of a pandemic. In our study, the Partial Least Squares Structural Equation Modelling (PLS-SEM) method is applied to a nationally representative sample, the data of which were provided by the data of the Global Entrepreneurship Monitor (GEM) international survey on Hungary. Our results show that the willingness of small and medium-sized enterprises in Hungary to start a business was not significantly affected by the COVID-19 pandemic. This is because positive perception can be traced back to past influences, such as individual characteristics, positive perceptions of the majority society, and the respondents' perception of the Hungarian government's COVID-19 related measures.

Keywords: COVID-19; Entrepreneurial Perception; PLS-SEM

1. Introduction

In light of the growth of the world's population, the acceleration of global economic processes and the increasing use of resources associated with such activities, it is becoming increasingly clear that classical business projections are no longer sustainable (Kocmanová & Dočekalová 2014). The COVID-19 pandemic erupted into an ongoing crisis in 2019, which strongly transformed the SME sector in the world and in Hungary as well (Lipkind & Kitrar, 2021; Žak & Garncarz, 2020). The pandemic has resulted not only in serious social and economic consequences in affected regions but has also led to acceleration of negative health and mental problems in both infected and non-infected populations (Feng et al., 2020). Fear and anxiety have affected business perceptions but also paved the way for the identification of COVID-19 as an opportunity perspective (Mahmud et al., 2020).

In the past two decades, the psychological factors and perceptions necessary for starting a business have been extensively studied in order to better understand the mechanisms by which business start-ups can be explained (Gorgievski et al., 2010). However, there is still an inadequate amount of literature on the effects of COVID-19 on entrepreneurial activities and perceptions (Hernández-Sánchez et al., 2020; Giones et al., 2020; Mahmud et al., 2020). Hernández-Sánchez et al. (2020) argue that individuals' entrepreneurial intentions were influenced through the COVID-19 pandemic: they saw a subjective perception of severe threats. However, the pandemic not only affected individual factors but also shocked businesses in economic terms: it is enough to think about changes in consumption or restrictions concerning the spread of the COVID-19 pandemic, which keeps threatening the existence of many start-ups or long-established businesses (Kuckertz et al., 2020). Coronavirus epidemics have caused global health emergencies and a global economic slowdown. Trade, investment, and employment were all affected, and the crisis also had an impact on the achievement of sustainability goals.

The emergence of coronavirus epidemics has affected a number of sectors, most notably tourism, transport, education and health (Abulescu, 2020). Small and medium-sized enterprises were the most vulnerable group of businesses because they did not have the resources to survive the crisis. As a result of the economic crisis, state intervention appeared

Citation:

Gosztanyi, M. (2022). COVID-19 positivism: Has COVID-19 changed Hungarian entrepreneurs' perception of business opportunities?, *Prosperitas*, 9(4), 1. Budapest Business School. https://doi.org/10.31570/prosp_2021_0006

History:

Received: 25 Nov 2021
 Last Revised: 4 Feb 2022
 Accepted: 18 Feb 2022
 Published: 14 Mar 2022



Copyright:

© 2022 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY-NC) license.

in the sector and the role of international financial institutions began to grow (Abulescu, 2020). Public policies mostly affected late repayment of loans, payment of taxes, waivers on the payment of certain labour or social security costs, prioritising occupational safety, and disaster relief (Selkowski, 2020). Nevertheless, millions of businesses have lost their planned revenues and millions of jobs have been put at risk. The crisis has thus had dramatic socio-economic effects, because a large part of the population has become impoverished, unable to pay for housing, lost jobs or lost their homes, which leads to health problems, depression, and thus higher global mortality rates (Selkowski, 2020). In their study, Alves et al. (2020) argue that small businesses were particularly sensitive to the effects of the crisis, and their quantitative comparative analysis showed that the sharp decline in market demand had a very strong negative impact on small businesses. Hungarian research in the field shows that as a result of COVID-19 Hungarian small and medium-sized enterprises were obliged to reconsider their strategies and optimise their processes (Pirohov-Tóth, 2021). The presence and development of supportive digitisation processes in enterprises strengthened (Noszkay, 2021).

This research examines the perceptions of Hungarian entrepreneurs in the classical sense as a result of the COVID-19 pandemic. By this we mean that, similarly to previous studies (Krueger et al., 2000; Wach & Bilan, 2021), we also focus on the antecedents of entrepreneurial intent in the context of the COVID-19 virus, however, the relationship between entrepreneurial intent and actual behaviour is not examined in this study. It is important to note that, as we see it, not all entrepreneurial intentions and perceptions are translated into actual behaviour or action (Shirokova et al., 2016; Gubik & Bartha, 2018; Nowiński et al., 2020; Gieure et al., 2020), this is especially true to perceptions developed in crisis conditions (Giones et al., 2020; Ratten, 2020). Several studies have already contributed to the understanding of the relationship between intentions and actual behaviour (see summative work by Neneh, 2019). However, it can be concluded that there is a significant and positive correlation between entrepreneurial worldview and perception and specific business start-up actions (Shirokova et al., 2016; Van Gelderen et al., 2015), and there is also a strong correlation between entrepreneurial intent, actual entrepreneurship and start-up behaviour (Shinnar et al., 2018).

Even if we have not been able to examine actual actions in the context of our present research, we believe that perceptions of entrepreneurship and business start-ups should be examined. A study of this kind is important because an entrepreneurial mindset can integrate activities that can help our society recover from a crisis (Kuckertz et al., 2020). In addition, our research focuses on a topic that revolves around the issue of opportunity and starting a business, and, as a result, our study primarily aims to capture the cognitive change of entrepreneurs influenced by COVID-19.

In our study, we approached the perception of entrepreneurship from two directions: on the one hand, we examined the extent to which entrepreneurs interpret the crisis as a new opportunity, and on the other hand, we examined entrepreneurs' specific intention to start a business. In order to do that, firstly the concepts of business opportunity and business start-up need to be defined. According to the literature, recognizing business opportunities consists in a person's ability to recognize, discover, and seize trends and new business concepts in an ever-changing context (Hassan et al., 2020; Nowiński et al., 2020; Wach & Bilan, 2021). Several previous studies have confirmed that the recognition of opportunities is closely related to perceived behavioural control and entrepreneurial intent (Mahmood et al., 2019). Hassan et al. (2020) reported that recognizing business opportunities positively correlates with the entrepreneurial intent of prospective entrepreneurs, while Anwar et al. (2021) argued that recognizing business opportunities plays a crucial role not only in shaping entrepreneurial intent but also indirectly and it also has an impact on starting a business. The role of entrepreneurial self-image in predicting entrepreneurial intent is also receiving increasing attention in the literature on entrepreneurship (Schmitt et al., 2018). Some studies define entrepreneurial self-image as the self-confidence of entrepreneurs in implementing specific actions (Shahab et al., 2019), while others describe it as a set of concepts or as the self-confidence of entrepreneurs in their own performance and the success of their entrepreneurial activities (Segal et al., 2005; Liñán & Chen, 2009). Shahab et al. (2019) consider the self-image to be a crucial source of initiative in the case of start-up business. The concept of starting a new business is identified in the literature as follows: a process that begins with a cognitive state in which a person is driven to engage in entrepreneurial activities and ends

when that person sets up or manages an actual business (Elnadi & Gheith, 2021; Baharuddin & Rahman, 2021; Nguyen, 2020).

Thus, in our study, we examine the causes of entrepreneurial perception, which we define as the capacity, skills, and knowledge associated with the components of an enterprise. These visions and abilities allow individuals to subsequently take entrepreneurial actions (Gieure et al., 2020; Shirokova et al., 2016; Ajzen, 1991).

2. Research sample and variables

Our research data have been taken from the Global Entrepreneurship Monitor (GEM) for Hungary, which was compiled in 2021. The Hungarian sample was developed by random multi-stage stratified sampling, as a result of which the sample is representative of the territorial location of Hungarian SMEs, as well as the age and gender of entrepreneurs. The number of items in the total sample is 2016. However, in the present analysis, we further narrowed our sample to those respondents who are already running businesses or plan to start a business. In the scope our study, as a result of this, we worked with a sample of 366 items after data cleansing.

In our analysis, we sought to explain the causality of two main variables: 1) to capture COVID-19 as a new opportunity, on the one hand, and 2) to start a business under the influence of COVID-19, on the other hand (Table 1).

Table 1. Distribution of basic variables (N = 366). Source: own work

Variables	Values	Frequencies	%
New opportunities in COVID-19 – Sucnewopp	No	81	22.13
	Yes	49	13.39
	N/A	236	64.48
Starting a business COVID-19– Sucrstart	No	56	15.3
	Yes	68	18.58
	N/A	242	66.12
Government Measures COVID-19– Sucpgroves	No	72	16.67
	Yes	52	14.21
	N/A	239	66.12
Education level of entrepreneurs	Low education	108	29.51
	Middle education	128	34.98
	Higher education	130	35.52
Age of entrepreneurs	18 – 37	124	33.88
	38 – 48	111	30.33
	49 and over	131	35.79

The distributions of both variable bases are characterized by a large lack of data (64-66%). It can also be seen that, as shown by a roughly nine percentage point figure, the majority of respondents see no new opportunity in COVID-19 (22.13%). In the case of the answers given to start a business, there is an even smaller difference between the respondents who start a business (15.30%) and those who reject it (18.58%). An important explanatory variable in our analysis is the subsequent evaluation of the measures taken by the Hungarian government during the pandemic. The variable is again characterized by a high data gap (66.12%) and a slightly higher proportion (2 percentage points) of those respondents who did not consider the government's measures concerning the coronavirus pandemic to be appropriate. In our analysis, we included two more control variables; a brief statistical review of such variables is also provided. On the one hand, the distribution of respondents by

education level shows that roughly 1/3 of the respondents have middle (34.98%) or higher education (35.52%) level and 29.51% of the respondents have low education levels in the sample. Finally, in the case of the age structure, three groups of roughly similar sizes were formed for our analysis: the 18-37 age group (33.88%), the 38-48 age group (30.33%), and finally the 49 and over age group (35.79%).

2. PLS-SEM

For the analysis in the scope of our study, our data were analysed with PLS-SEM (Partial Least Squares – Structural Equation Modelling) methodology. PLS-SEM is one of the methods of analysis for complex systems, and it represents a system-wide interpretation point of view of the data. From a structural analysis point of view, it approaches the data points with substantive hypothesis testing, which can reveal the relationships between exogenous and endogenous (latent) variables (Hair et al., 2016). When examining complex systems such as entrepreneurial perceptions (Byrne – Callaghan [2013]), it is not enough to examine each explanatory variable separately; these variables are worth analysing at a system level in their context. Complex systems are non-linear (Nicolis, 2012) third-order systems (Deacon, 2007), are far from equilibrium (Reed & Harvey, 1996) and have multiphase correlations (DeLanda, 2005) of autopoiesis (Maturana & Varela, 1980), structure and hierarchy (Cilliers, 2001), and can be described by control parameters.

SEM is also a suitable method for researching Hungarian companies because it is a multivariate technique suitable for capturing latent dimensions and examining their combined effects at a system level (Dijkstra & Henseler, 2015). Thus, SEM allows for the simultaneous examination of the whole set of equations and, where appropriate (for example, when evaluating interactions), it also enables the correction of errors in the equations, as it estimates both model parameters and model fit measurements (Johnson & Sohi, 2014). All these features make it possible to compare the regression coefficients simultaneously. SEM thus provides a unified framework for integrating a number of linear and non-linear models and testing them flexibly (Koltai, 2013).

PLS-SEM is a two-layer modelling process. The first layer (measurement model) consists of latent variables (generated from the measured variables). Thus, the first layer captures the relationship between manifest and latent variables. The creation of this model can be reflective or formative. The second layer (structural model) identifies the causal relationships between the latent variables.

The evaluation model of PLS-SEM can be evaluated according to different criteria: in this case, according to the reliability of internal consistency (as measured by the Cronbach's alpha), the reliability of the indicators (average variance extracted (AVE)), the convergence validity, and the validity of the discriminants-monotrait ratio, HTMT]) (Jöreskog & Wold, 1982).

In the case of a reliable and valid measurement model, it is possible to move on to the evaluation of the structural model. Multiple metrics can be used for this as well. Road coefficients usually range from -1 to +1; higher absolute values indicate relationships between stronger (predictive) constructs. In the models, direct and indirect as well as total effects are measured, the strength of which is expressed by the standardized path coefficients (β -s) and their significance (Hair et al., 2017). For road coefficients, typically both internal and external forecast statistics are calculated. For the in-sample prediction, the commonly used p-value and the explanatory force f^2 are used.

SRMS (Standardized Root Mean Square Residual) and NFI (Normed Fit Index or Bentler and Bonett Index) are preferred as statistics measurements for an entire PLS-SEM model. SRMS converts both the sample covariance matrix and the theoretical covariance matrix into correlation matrices. In other words, the difference between the observed correlation and the implicit correlation matrix of the model can be defined. Thus, this method enables the measurement of the average magnitude of the differences between the observed and expected correlations to function as an absolute measure of the (model) fit criterion. The NFI calculates the χ^2 value of the model and compares it with a reference value. Because the χ^2 value of the model alone does not provide sufficient information for judging the optimal fit of the model, NFI uses the χ^2 value from the null model as a measure of fit measurement (Lee, 2013)).

In our analysis, PLS-SEM methodologies were used due to the following reasons: our model is quite complex, and we use many latent variables to estimate our model. Although, our sample, representative, has a small number of elements ($N = 366$) and the distribution of variables does not always follow the normal distribution. In the structural model, we use both reflective and formative measurement approaches, and focus primarily on the causal relationships emerging in reality rather than on proving an a priori model.

3. Hypothesis system of the present research

Table 2: Description of research hypotheses. *Source: own work*

Hypotheses	
No.	Description
H1	Individual characteristics of entrepreneurs have a positive effect on the perception of society
H2	Individual characteristics of entrepreneurs have a positive effect on the emergence of a sustainability approach in the enterprise
H3	Individual characteristics of entrepreneurs have a positive effect on the positive perception of the government's COVID-19 measures
H4	Individual characteristics of entrepreneurs have a positive effect on starting a business
H5	Positive perceptions of society have a positive effect on starting a business
H6	Positive perceptions of society have a positive effect on the positive perception of the government's COVID-19 measures
H7	Starting a business has a positive effect on starting a business during the COVID-19 era
H8	Starting a business has a positive effect on offering entrepreneurs new opportunities
H9	Positive perception of the government's COVID-19 measures has a positive effect on starting a business during the COVID-19 era
H10	Positive perception of the government's COVID-19 measures has a positive effect on entrepreneurs identifying new opportunities
H11	Emergence of a sustainability approach in the company has a positive effect on entrepreneurs' ability to see new opportunities
H12	Entrepreneurs' seeing new opportunities has positive effects on starting businesses

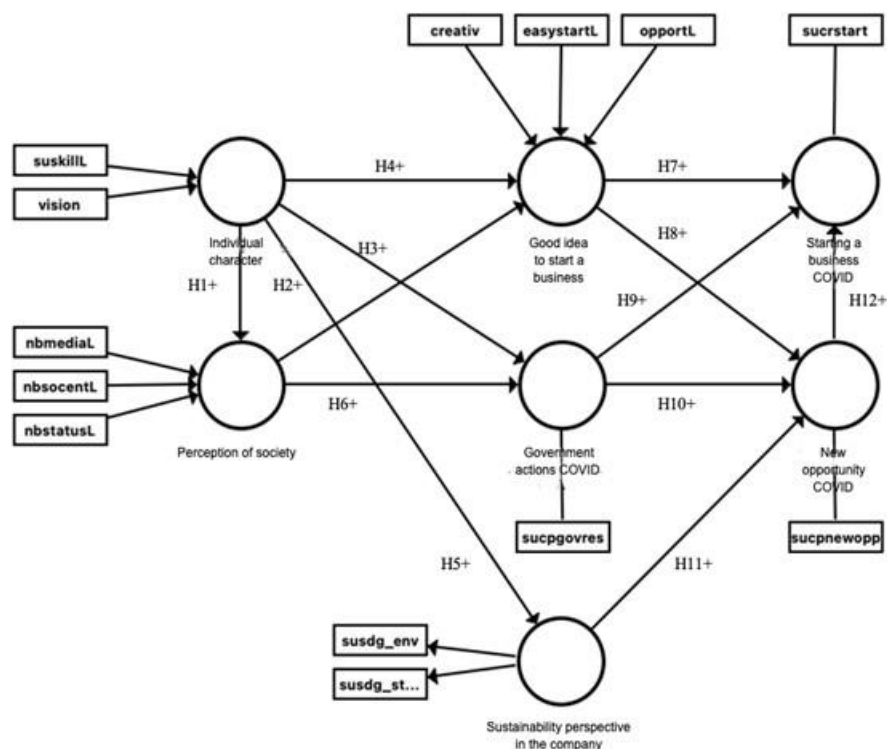


Figure 1. System of research hypotheses and measured variables, the first and second latent variables of PLS-SEM model of enterprises. *Source: own work*

With the help of our research hypothesis system, we explored the cases in which COVID-19), was subject to a positive assessment, and the factors that influenced the entrepreneurs' perception about business opportunities due to the pandemic.

4. The PLS-SEM model of Hungarian entrepreneurs' perception of COVID-19

In our model, we used the first type of latent variables, which are indicated by circles in Figure 1. The model was created from a total of seven first-order latent variables, four of which are built into the base model in the form of reflective measurement models and three in the form of formative models. The indicators of the measured variables of the reflective models were lower than 0.095 in all cases, thus redundancy could be avoided (See Appendix A). As a result, the reliability of reflective constructs is higher than the recommended minimum threshold. The AVE values for the constructs are also higher than the cut-off value (0.50), so the criterion for the convergence validity of the models is met. As conceptually similar indicators were included in the measurement models, the HTMT values should be less than 0.90. Therefore, reflective and formative measurement models meet the discriminant criterion.

The latent and measured variables in our model form a dense network extending to 12 measured variables. The first kind of latent variable of individual characteristics comprises two measured variables: the entrepreneur has the knowledge and means necessary to start a business (suskillL) based on self-declaration, and the entrepreneur plans his / her entrepreneurial career in the long run (vision). The perception of the society (or majority) is a latent variable that captures the positive respondents' positive image about the society: this means the respondent thinks that Hungary is a country where successful entrepreneurs are often portrayed in the media (nbmedial), that in many cases domestic companies solve social goals (nbsocentL) and that Hungarian society is a supportive society firmly supporting those who start businesses (nbstatusL). Our third latent variable measures if it is a good idea to start a business in Hungary (opportL), because administration and bureaucracy related to it is a simple process (easyL). The latent variable of sustainability approach in the enterprise contains two measured variables: on the one hand, it measures whether the entrepreneur keeps in mind the social impact in the during daily operation of his/her enterprise and has

taken steps in this direction in the past year (susdg_steps); on the other hand, it focuses what the environmental impact includes (susdg_env). Attitudes and thoughts related to COVID-19 were measured in the questionnaire with three variables, which were included in the model as latent variables, as we wanted to capture the direct mechanism of action related to such variables. Thus, the respondent's positive assessment of the Hungarian government's decisions regarding COVID-19 (sucpgovres), the start-up of a beneficial business under COVID-19 (sucrstart) and the fact that COVID-19 (sucnewpopp) offers new opportunities appear as a kind of latent variable.

Appendix B summarizes the factor scores and collinear statistics (VIF - Variance Inflation Factor) of the measured variables. In our model, the VIF values for the measured variables are adequate in all cases (above 1.0), so there is no collinearity. In addition, reflective factor scores (above 0.6) and scores for the formative models (above 0.2) are also appropriate. The t-values for the structural model are shown in Figure 4 and Appendix C. A 5.000-sample bootstrap method was used to test the significance of path coefficients. Because the PLS-SEM methodology was used, the SRMR as well as the NFI value were taken into account when examining the optimal fit of the model. The SRMR of the model is .053 and the NFI is .647. Therefore, our results shows that our model is statistically correct.

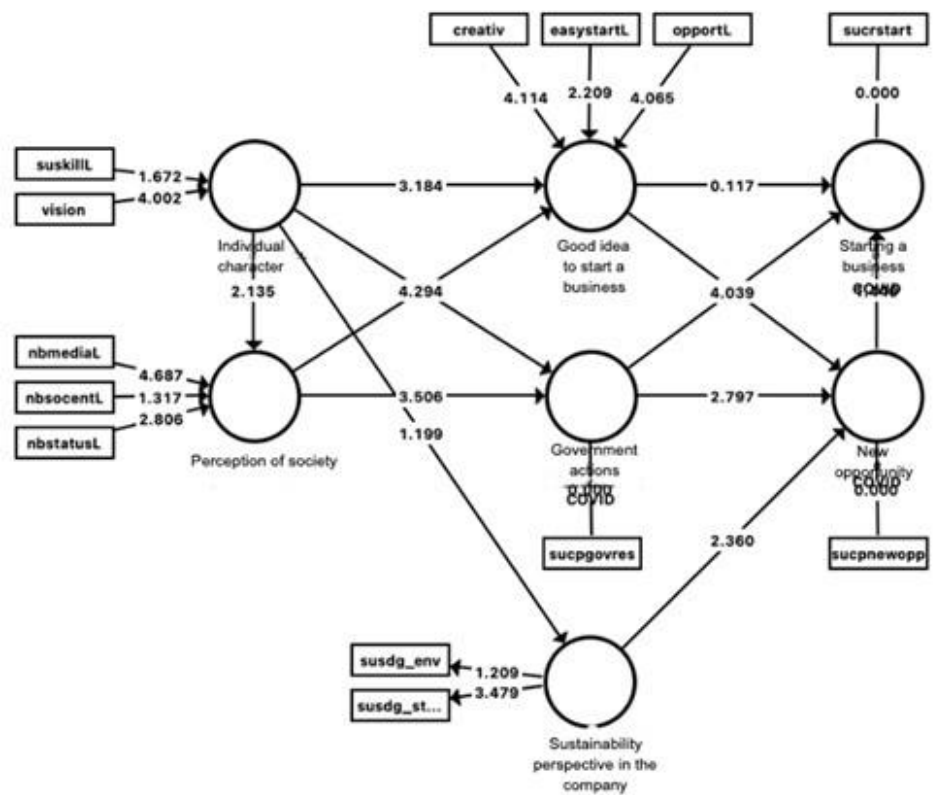


Figure 2. PLS-SEM and bootstrap (N = 366). Source: own work

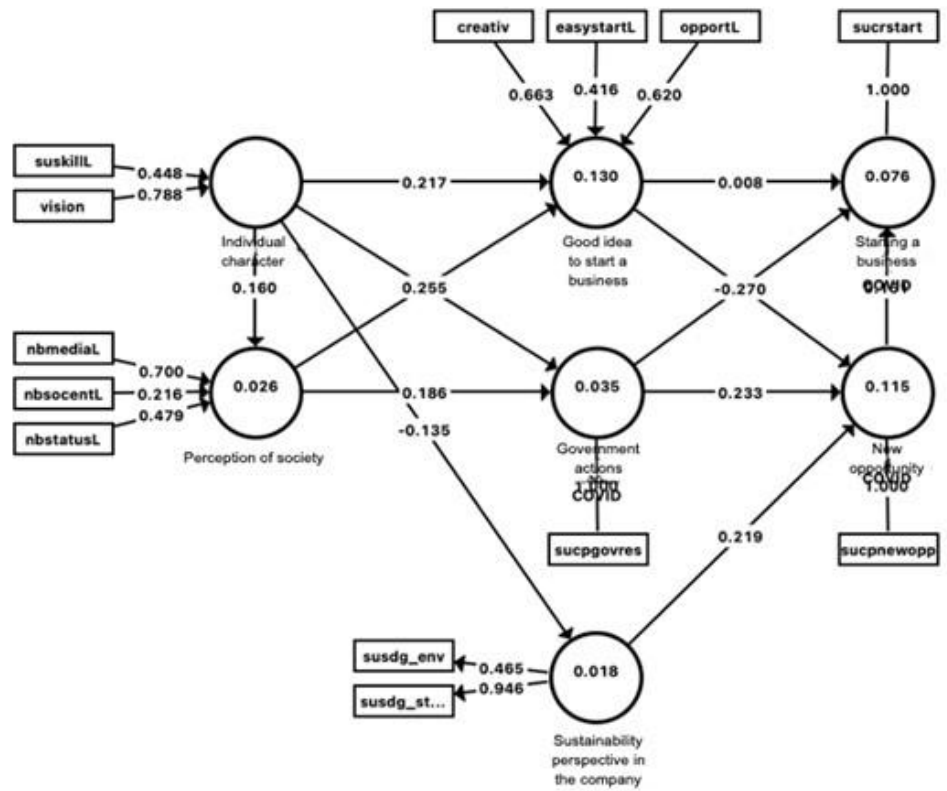


Figure 3. PLS-SEM of enterprises, as well as road coefficients and factor weights. *Source: own work*

The path coefficients of our model are shown in Figure 5 and the corresponding p-values are available in Appendix C. Based on Appendix C, it can be seen that not all path coefficients are significant, so the model may include ‘first type of errors’. Consequently, we created a significant second model to avoid the first type error. Our significant model’s bootstrap values are shown in Figure 6 and the model’s coefficients values are shown in Figure 7.

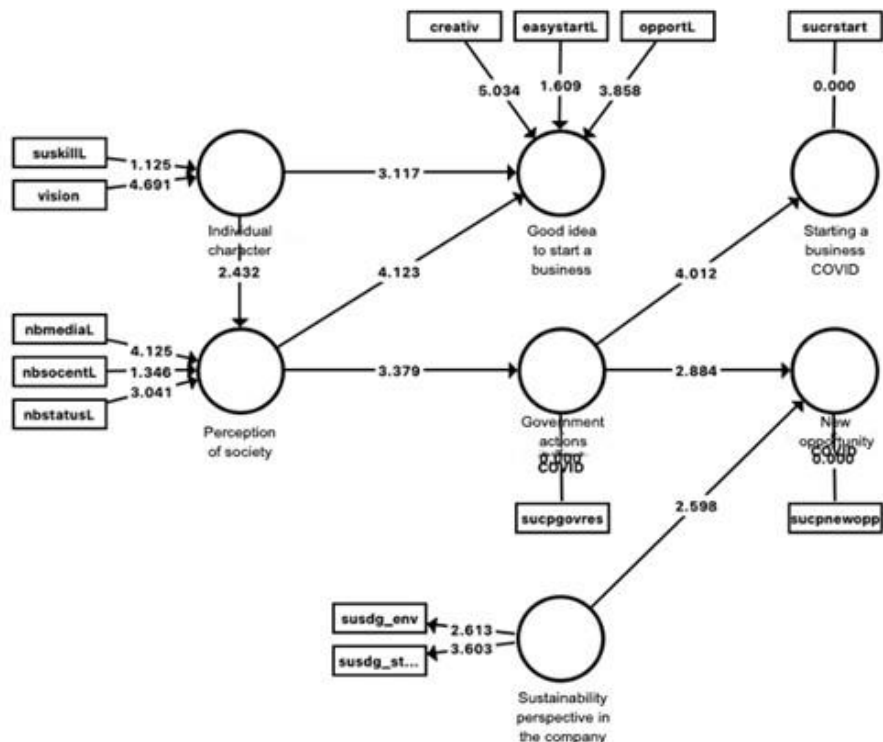


Figure 4. PLS-SEM and bootstrap (N = 366). *Source: own work*

a strong difference can be observed in the model based on the parametric test statistics (Table 2).

Table 2: MGA analysis of Age variable. Source: own work

	18-37 age group		37-48 age group		49+ age group	
	t-value	p-value	t-value	p-value	t-value	p-value
Individual Attributes -> Good idea to start a business	1.200	0.231	2.027	0.043	0.888	0.375
Individual Attributes -> Majority perception	1.054	0.292	0.306	0.759	1.831	0.068
Sustainability in Business -> New opportunity COVID-19	2.540	0.011	1.897	0.058	0.405	0.686
Government action + -> Starting a business during COVID-19	1.111	0.267	3.171	0.002	3.315	0.001
Government actions + -> New opportunity during COVID-19	1.460	0.145	3.420	0.001	0.185	0.853
Majority Perception -> Good idea to start a business	1.377	0.169	3.655	0.000	1.502	0.134
Majority Perception -> Government Measures +	0.255	0.799	2.202	0.028	2.347	0.019

Table 3: Education by MGA analysis. Source: own work

	Low education		Middle education		Higher education	
	t-value	p-value	t-value	p-value	t-value	p-value
Individual Attributes -> Good idea to start a business	3.200	0.001	1.030	0.304	0.742	0.458
Individual Attributes -> Majority perception	0.863	0.388	1.226	0.221	0.881	0.379
Sustainability in Business -> New opportunity COVID-19	2.016	0.044	3.713	0.000	0.362	0.717
Government action + -> Starting a business during COVID-19	2.266	0.024	2.135	0.033	1.279	0.202
Government actions + -> New opportunity during COVID-19	1.849	0.065	1.542	0.124	2.161	0.031
Majority Perception -> Good idea to start a business	2.262	0.024	1.227	0.220	3.307	0.001
Majority Perception -> Government Measures +	1.831	0.068	1.136	0.256	2.324	0.021

Based on the p-values, it can be seen that the model is most significant in the 37-48-year-old, middle-aged entrepreneur group with the exception of one path variable (individual characteristics and perception of the majority). Therefore, the model does not give a succinct result in the case of either 18-37-year-olds or 49-year-olds. In the case of the 18-37 age group, only the emergence of a sustainability perspective and related new opportunities during COVID-19 show significant value.

Education level was the other variable in relation to which an MGA analysis was performed. For this purpose, we again formed three groups of approximately similar sizes based on whether someone holds primary, secondary or tertiary education qualifications. Again, strong differences were observed along this variable in relation to the model (Table 3).

Based on our results, it is not possible to determine the group to which the model best fits as far as educational attainment is concerned. Most of the significant pathways are found in the case of respondents with a low educational level. However, only a few significant path correlations are found in their case as well.

Thus, based on the MGA results, it can be concluded that the model shows a rather high degree of heterogeneity along external variables. Significant and large differences can also be seen along age as well as along educational attainment.

As a summary of our research results, the verification of our hypotheses is presented in Table 4.

Table 4. Verification of research hypotheses. Source: own work

hypothesis	t-value	p value	Sign.	f ²	Sign.	Decision
H1	2.416	.016	**	.030	sign. pos., fa	Verified
H2		.222			non sign.	Not Verified
H3		.216			non sign.	Not Verified
H4	3.137	.002	**	.051	sign. pos., fa.	Verified
H5	4.063	.000	***	.071	sign. pos., fa.	Verified
H6	3.483	.001	***	.032	sign. pos. fi.	Verified
H7		.907			non sign.	Not Verified
H8		.311			non sign.	Not Verified
H9	3.994	.000	***	.067	sign. pos. fa.	Verified
H10	2.851	.004	**	.057	sign. neg., fa.	Verified
H11	2.596	.009	**	.052	sign. pos., fa.	Verified
H12		.520			non sign.	Not Verified

Notes: fi = f-value shows inadequately strong correlation, fa = f-value shows adequately strong correlation. $p < 0.001$:***, $0.001 < p < 0.01$:**, $0.01 < p < 0.05$:*, $p < 0.05 < p < 0.10$: (empty).

Out of our hypotheses, H1, H4, H5, H6, H9, H10, and H11 can be verified based on p- and f-statistics. In other words, some Hungarian entrepreneurs see a new opportunity in COVID-19 and are also planning to start a business as a result of COVID-19. However, these two findings are not related. In both cases, an important factor is the way the entrepreneurs taking part in this research assessed the government's response to COVID-19. The interpretation, however, as a new option is not limited to an economic opportunity, but also extends to the emergence of a new approach to sustainability. It is important to note that starting a business in general and starting a business during the COVID-19 era cannot be traced back to the same effects: there is no correlation between the perceptions of the two situations according to the results of our research.

6. Summary

Our study analysed the perception of Hungarian entrepreneurs regarding their attitude to COVID-19 using the PLS-SEM method on a nationally representative sample. The PLS-SEM method provided an opportunity for system-wide analysis of perceptions. As a result of our research, we verified a model in the case of which we were able to include both attitudinal variables and perception variables related to COVID-19 as the first kind of latent variables, as well as the variables with which we were able to analyse the complex impact processes behind the variables.

For our analysis, we reviewed the theoretical background of entrepreneurial perception. Our results show that a small segment of Hungarian entrepreneurs feel that the pandemic has opened up new opportunities and encouraged them to start new businesses. Even so, this positive perception strongly depends on the individual characteristics of entrepreneurs, how positively they see the business context in Hungary independently of COVID-19, and to what extent they think the government's COVID-19 measures were appropriate. It is also important to note that, based on our results, no correlation can be detected between one's willingness to start a business and one's response to the possibility of starting a business as a result of COVID-19: there is no significant correlation between the two latent variables. Furthermore, the concept of COVID-19 as a new opportunity should not be limited to business start-ups: even if the two concepts have common explanatory elements, the new opportunity outlines a much broader perspective not just an economic one. The emerging perspective includes a need for new environmentally friendly and socially responsible approaches. Finally, we consider it important to note that our model primarily offers significant information concerning respondents in the from 37 to 48 age group and concerning either the younger or older age cohorts the model does not reveal statistically acceptable significance. In the case of education, the model also shows strong heterogeneity, and no agreement can be detected with respect to the model concerning any of the groups of different educational levels.

Our research results are in line with the findings of other sources (Mahmood et al. 2019): both individual and social factors play a significant role in the perception of business opportunities. At the same time, our results do not support the statements expressed by the Hungarian literature. Based on our data, it cannot be maintained that the pandemic caused a radical change in the perception of Hungarian entrepreneurship. Based on our results, the pandemic did not cause such a radical change. However, this finding, of course, raises additional factors that we were unable to control in our present study.

Based on our results, we believe that the positive perception of Hungarian entrepreneurs about COVID-19 did not develop as a result of the pandemic, but it forms an inherent part of a process in which entrepreneurs with a positive business environment did not change their positive perception of COVID-19 but continued to be positive about the altered situation. At the same time, COVID-19 has not resulted in a drastic turn for entrepreneurs with a negative perception. All this means that the global pandemic has not substantially changed Hungarian entrepreneurs' perception of business opportunities.

Funding: Project no. TKP2021-NKTA-44 has been implemented with the support provided by the Ministry of Innovation and Technology of Hungary from the National Research, Development and Innovation Fund, financed under the TKP2021-NKTA funding scheme.

Note: The publication is based on the Hungarian data of the Global Entrepreneurship Monitor research coordinated by Budapest LAB – Office for Entrepreneurship Development, which was provided by Budapest Business School as the Hungarian partner of the consortium on the basis of an individual permit.

Conflicts of Interest: The author declares no conflict of interest.

References

1. Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
2. Albuлесcu, C. (2020). Coronavirus and financial volatility: 40 days of fasting and fear. Published on Mar 9. *arXiv preprint*, arXiv: 2003.04005.

3. Alves, J. C., Lok, T. C., Luo, Y. B., & Hao, W. (2020). Crisis Management for Small Business during the COVID-19 Outbreak: Survival, Resilience and Renewal Strategies of Firms in Macau. <https://doi.org/10.21203/rs.3.rs-34541/v1>
4. Baharuddin, G., & Ab Rahman, A. (2021). What is the most effective antecedent for developing entrepreneurial intention among Muslim youth in Indonesia?. *Entrepreneurial Business and Economics Review*, 9(1), 75–88. <https://doi.org/10.15678/EBER.2021.090105>
5. Byrne, D., & Callaghan, G. (2013). *Complexity Theory and the Social Sciences: The State of the Art*. Routledge.
6. Cepel, M., Gavurova, B., Dvorský, J., & Belas, J. (2020). The impact of the COVID-19 crisis on the perception of business risk in the SME segment. *Journal of International Studies*, 13(3), 248–263. <https://doi.org/10.14254/2071-8330.2020/13-3/16>
7. Cilliers, P. (2001). Boundaries, hierarchies and networks in complex systems. *International Journal of Innovation Management*, 5(2), 134–147. <https://doi.org/10.1142/S1363919601000312>
8. Deacon, T. W. (2007). *Three levels of emergent phenomena*. In Murphy, A. & Stoeger, L. (eds.): *Evolution and Emergence: Systems, Organisms, Persons* (pp. 81–110). Oxford University Press.
9. Delanda, M. (2005). *Intensive Science and Virtual Philosophy*. Continuum.
10. Dijkstra, T. K., & Henseler, J. (2015). Consistent and asymptotically normal PLS estimators for linear structural equations. *Computational Statistics & Data Analysis*, 81(January), 10–23. <https://doi.org/10.1016/j.csda.2014.07.008>
11. Elnadi, M., & Gheith, M. H. (2021). Entrepreneurial ecosystem, entrepreneurial self-efficacy, and entrepreneurial intention in higher education: Evidence from Saudi Arabia. *The International Journal of Management Education*, 19(1), 100458. <https://doi.org/10.1016/j.ijme.2021.100458>
12. Feng, L-s., Dong, Z-j., Yan, R-y., Wu, X-q., Ma, J., & Zeng, Y. (2020). Psychological distress in the shadow of the Covid-19 pandemic: Preliminary development of an assessment scale. *Psychiatry Research*, 291, 113202. <https://doi.org/10.1016/j.psychres.2020.113202>
13. Van Gelderen, M., Kautonen, T., & Fink, M. (2015). From entrepreneurial intentions to actions: Self-control and action-related doubt, fear, and aversion. *Journal of Business Venturing*, 30(5), 655–673. <https://doi.org/10.1016/j.jbusvent.2015.01.003>
14. Giones, F., Brem, A., Pollack, J. M., Michaelis, T. L., Klyver, K., & Brinckmann, J. (2020). Revising entrepreneurial action in response to exogenous shocks: Considering the COVID-19 pandemic. *Journal of Business Venturing Insights*, 14(November), e00186. <https://doi.org/10.1016/j.jbvi.2020.e00186>
15. Gliure, C., Benavides-Espinosa, M. del M., & Roig-Dobón, S. (2020). The entrepreneurial process: The link between intentions and behavior. *Journal of Business Research*, 112(May), 541–548. <https://doi.org/10.1016/j.jbusres.2019.11.088>
16. Gorgievski, M. J., Bakker, A. B., Schaufeli, W. B., van der Veen, H. B., & Giesen, C. W. M. (2010). Financial problems and psychological distress: Investigating reciprocal effects among business owners. *Journal of Occupational and Organizational Psychology*, 83(2), 513–530. <https://doi.org/10.1348/096317909X434032>
17. Gubik, A. S., & Bartha, Z. (2018). The role of university in influencing the entrepreneurial intention of university students. *International Entrepreneurship Review*, 4(3), 177–188.
18. Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2016). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage Publications
19. Hair, J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: Updated guidelines on which method to use. *International Journal of Multivariate Data Analysis*, 1(2), 107–123. <https://doi.org/10.1504/IJMDA.2017.10008574>
20. Hassan, A., Saleem, I., Anwar, I., & Hussain, S. A. (2020). Entrepreneurial intention of Indian university students: the role of opportunity recognition and entrepreneurship education. *Education + Training*, 62(7/8), 843–861. <https://doi.org/10.1108/ET-02-2020-0033>
21. Hernández-Sánchez, B. R., Cardella, G. M., & Sánchez-García, J. C. (2020). Psychological Factors that Lessen the Impact of COVID-19 on the Self-Employment Intention of Business Administration and Economics' Students from Latin America. *International Journal of Environmental Research and Public Health*, 17, 5293. <https://doi.org/10.3390/ijerph17155293>
22. Johnson, J. S., & Sohi, R. S. (2014). The curvilinear and conditional effects of product line breadth on salesperson performance, role stress, and job satisfaction. *Journal of the Academy of Marketing Science*, 42(1), pp. 71–89. <https://doi.org/10.1007/s11747-013-0339-4>
23. Jöreskog, K. G., & Wold, H. O. (1982). *Systems under indirect observation: Causality, structure, prediction*. North Holland.
24. Kitrar, L., & Lipkind, T. (2021). The relationship of economic sentiment and GDP growth in Russia in light of the Covid-19 crisis. *Entrepreneurial Business and Economics Review*, 9(1), 7–29. <https://doi.org/10.15678/EBER.2021.090101>
25. Kocmanová, A., & Dočekalová, M. (2014). Corporate sustainability: environmental, social, economic and corporate performance. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 59(7), 203–208. <https://doi.org/10.11118/actaun201159070203>
26. Koltai J. (2013). A strukturális egyenletek modellezésének bemutatása egy komplex dizájnú kutatás (ISPJ) adatain keresztül. [Demonstration of the modeling of structural equations through data from a complex design research (ISPJ)]. *Szociológiai Szemle*. 23(2), 31–51.
27. Krueger, N. F., Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 15(5-6), 411–432. [https://doi.org/10.1016/S0883-9026\(98\)00033-0](https://doi.org/10.1016/S0883-9026(98)00033-0)
28. Kuckertz, A., Brändle, L., Gaudig, A., Hinderer, S., Morales Reyes, C. A., Prochotta, A., Steinbrink, K. M., & Berger, E. S. C. (2020). Startups in times of crisis – A rapid response to the COVID-19 pandemic. *Journal of Business Venturing Insights*, 13, e00169. <https://doi.org/10.1016/j.jbvi.2020.e00169>
29. Lee, Y., & Choi, J. (2020). A structural equation model of predictors of online learning retention. *Internet and Higher Education*, 16(1), pp. 36–42. <https://doi.org/10.1016/j.iheduc.2012.01.005>
30. Liñán, F., & Chen, Y-W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice*, 33(3), 593–617. <https://doi.org/10.1111/j.1540-6520.2009.00318.x>
31. Mahmud, S., Talukder, M. U., & Rahman, M. (2020). Does 'Fear of COVID-19' trigger future career anxiety? An empirical investigation considering depression from COVID-19 as a mediator. *International Journal of Social Psychiatry*, 67(1), 35–45. <https://doi.org/10.1177/0020764020935488>
32. Maturana, H.; & Varela, F. (1980). *Autopoiesis and Cognition: The Realization of the Living*. Reidel.

33. Mohammed, A., Zubairu, U. M., & Oni, E. O. (2021). Public entrepreneurship literature from 2010 to 2019: A systematic review. *International Entrepreneurship Review*, 7(1), 45–58. <https://doi.org/10.15678/IER.2021.0701.04>
34. Nicolis, G. (2012). *Introduction to Nonlinear Science*. Cambridge University Press.
35. Noszkay, E. (2021). Vállalati, vállalkozói válaszok, aktivitások a COVID-19 járvány fenyegető kihívásainak idején. [Corporate and Entrepreneurial Reactions, Activities during the Threatening Challenges of the COVID-19 Pandemic]. *Polgári Szemle*, 17(1-3), 95–116. <https://doi.org/10.24307/psz.2021.0708>
36. Nowiński, W., Haddoud, M. Y., Wach, K., & Schaefer, R. (2020). Perceived public support and entrepreneurship attitudes: A little reciprocity can go a long way!. *Journal of Vocational Behavior*, 121, 103474. <https://doi.org/10.1016/j.jvb.2020.103474>
37. Nystrand, B. T., & Olsen, S. O. (2020). Consumers' attitudes and intentions toward consuming functional foods in Norway. *Food Quality and Preference*, 80, 103827. <https://doi.org/10.1016/j.foodqual.2019.103827>
38. Pirohov-Tóth, B. (2021). A COVID-19 vírus második hullámában tapasztalható foglalkoztatási kihívások a vállalatok szemszögéből. [Employment Challenges in the Second Wave of the COVID-19 Virus from a Corporate Perspective]. *International Journal of Engineering and Management Sciences (IJEMS)*, 6(2). <https://doi.org/10.21791/IJEMS.2021.2.13>.
39. Reed, M., & Harvey, D. L. (1996). Social science as the study of complex systems. In Kiel, L. D., & Elliott, E. (eds.): *Chaos Theory in the Social Sciences* (pp. 295–324). University of Michigan Press.
40. Reinartz, W., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of Research in Marketing*, 26(4), 332–344. <https://doi.org/10.1016/j.ijresmar.2009.08.001>
41. Segal, G., Borgia, D., & Schoenfeld, J. (2005). The motivation to become an entrepreneur. *International Journal of Entrepreneurial Behaviour & Research*, 11(1), 42–57. <https://doi.org/10.1108/13552550510580834>
42. Schmitt, A., Rosing, K., Zhang, S. X., & Leatherbee, M. (2018). A Dynamic Model of Entrepreneurial Uncertainty and Business Opportunity Identification: Exploration as a Mediator and Entrepreneurial Self-Efficacy as a Moderator. *Entrepreneurship Theory and Practice*, 42(6), 835–859. <https://doi.org/10.1177/1042258717721482>
43. Sułkowski, Ł. (2020). Covid-19 Pandemic, Recession, Virtual Revolution Leading to De-globalization?. *Journal of Intercultural Management*, 12(1), 1–11. <https://doi.org/10.2478/joim-2020-0029>
44. Shabab, Y., Chengang, Y., Arbizu, A. D., & Haider, M. J. (2019). Entrepreneurial self-efficacy and intention: do entrepreneurial creativity and education matter?., *International Journal of Entrepreneurial Behavior & Research*, 25(2), 259–280. <https://doi.org/10.1108/IJEBR-12-2017-0522>
45. Shirokova, G., Osiyevskyy, O., & Bogatyreva, K. (2016). Exploring the intention–behavior link in student entrepreneurship: Moderating effects of individual and environmental characteristics. *European Management Journal*, 34(4), 386–399. <https://doi.org/10.1016/j.emj.2015.12.007>
46. Wach, K., & Bilan, S. (2021). Public support and administration barriers towards entrepreneurial intentions of students in Poland. *Administrative Science Management Public*, 36(1). <https://doi.org/10.24818/amp/2021.36-04>
47. Żak, M., & Garncaz, J. (2020). Economic policy towards the challenges of the COVID-19 pandemic in selected European Union countries. *International Entrepreneurship Review*, 6(4), 21–34. <https://doi.org/10.15678/IER.2020.0604.02>

Appendix A

Reliability and validity of latent variables.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Individual Attributes	.72	.73	.77	.53
Sustainability approach at the company	.71	.70	.84	.63
Good idea to start a business	.81	.74	.77	.52
Government measures + COVID-19	.74	.71	.83	.62
Perception of the majority	.82	.82	.89	.73
Business_Starting_ COVID- 19	.85	.86	.90	.69
New Opportunity _ COVID- 19	.72	.71	.81	.59

Appendix B

Factor scores of measured variables and their VIF (collinear statistics) values.

	Factor scores	VIF
creativ	.663	1.011
easystartL	.416	1.015
nbmediaL	.700	1.076
nbsocentL	.216	1.084
nbstatusL	.479	1.065
oportL	.620	1.006
sucpgovres	.000	1.000
sucpnewopp	.000	1.000
sucrstart	.000	1.000
susdg_env	.328	1.024
susdg_steps2	.896	1.024
suskillL	.448	1.068
vision	.788	1.068

Appendix C

Result of the bootstrap procedure.

	Path coefficient (β)			t-value	p-value
	Original	Bootstrap	STDEV		
Individual Attributes -> Sustainability in Business	-0.135	-0.118	0.110	1.220	0.222
Individual Attributes -> Good idea to start a business	0.217	0.218	0.067	3.249	0.001
Individual Attributes -> Government Measures +	-0.062	-0.062	0.050	1.237	0.216
Individual Attributes -> Majority Perception	0.160	0.171	0.076	2.110	0.035
Sustainability in Business -> New Opportunity COVID-19	0.219	0.223	0.094	2.329	0.020
Good idea to start a business -> Starting a business during COVID-19	0.008	0.005	0.072	0.116	0.907
Good idea to start a business -> New Opportunity COVID-19	0.127	0.127	0.055	2.321	0.020
Government Measures + -> Starting a business during COVID-19	-0.270	-0.269	0.066	4.083	0.000
Government Measures + -> New Opportunity COVID-19	0.233	0.236	0.083	2.796	0.005
Majority Perception -> Good idea to start a business	0.255	0.264	0.059	4.330	0.000
Majority Perception -> Government Measures +	0.186	0.185	0.053	3.488	0.000
New Opportunity COVID-19 -> Starting a business during COVID-19	0.151	0.149	0.103	1.466	0.143

Appendix D

Result of the bootstrap procedure.

	Path coefficient(β)			t-value	p-value
	Original	Bootstrap	STDEV		
Individual Attributes -> Good idea to start a business	0.213	0.218	0.068	3.137	0.002
Individual Attributes -> Majority perception	0.170	0.183	0.070	2.416	0.016
Sustainability in Business -> New opportunity COVID-19	0.216	0.231	0.083	2.596	0.009
Government action + -> Starting a business during COVID-19	-0.233	-0.234	0.058	3.994	0.000
Government actions + -> New opportunity during COVID-19	0.246	0.248	0.086	2.851	0.004
Majority Perception -> Good idea to start a business	0.253	0.263	0.062	4.063	0.000
Majority Perception -> Government Measures +	0.176	0.175	0.051	3.483	0.001