Factors of Responsible Entrepreneurial Behaviour: Empirical Findings from Hungary

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Sustainability is a contemporary global challenge that could be resolved only with the active and effective contribution of businesses. Thus, this paper aims to shed light on factors influencing entrepreneurs' responsible behaviour. The analysis is based on the Hungarian merged dataset of the Global Entrepreneurship Monitor (GEM) Adult Population Survey (APS) 2021 and 2022 (n=697). The results are based on statistical analyses, namely non-parametric correlation analyses and factor analysis. The findings show that variables concerning entrepreneurs' responsible attitudes and behaviours significantly correlate with each other – except for two variables concerning directly with the SDGs, namely SDG awareness and considering SDG in KPIs. Using the five correlated variables, two factors can be created, where variables concerning intentions decouple from those concerning taking any steps towards minimising environmental or maximising social impacts. These results implicate that although entrepreneurs tend to consider environmental and/or societal aspects of their business decisions, they come short of taking steps towards them. Thus, responsible actions should be incentivised with education or targeted aids.

1. Introduction

Entrepreneurship is one of the basic drivers of employment, economic growth, societal well-being, and innovation in modern economies. Furthermore, the role of enterprises is also crucial concerning achieving sustainability – Agenda 2030, the framework for sustainable development of the United Nations, explicitly calls all businesses to apply their creativity and innovation to solving sustainable development challenges (United Nations, 2015).

In the European Union, micro and small enterprises – which make out the 98.9 % of enterprises of the non-financial business economy – employ almost half of the employees (48.4 %) and produce more than one-third (35.3 %) of the value added (Eurostat, 2022). It means that the vast majority of entrepreneurs run rather small businesses, and they contribute significantly to employment, but their efficiency lags behind the larger businesses. Nonetheless, based on the number of micro and small enterprises and their role both in employment and value-added production, the Sustainable Development Goals (SDGs) defined in Agenda 2030 cannot be achieved without their effective contribution (Pomare, 2018).

Although some authors suggest that environmental impact measured by ecological footprint (EF) can be reduced at low or no cost (Wackernagel and Beyers, 2019), the optimisation between economic success and environmental or social performance, however, needs managerial knowledge and efforts, i.e. to select measures and actions which could maximise social and/or minimise environmental impact in the most economic manner (Schaltegger and Synnestvedt, 2002). A good example is that fuel cell combined cycles (FCCC) can both reduce CO_2 emissions and utilize biomass economically over a wide range of economic conditions (Varbanov and Friedler, 2008). Experiences also emphasise the importance of managerial attitudes, as entrepreneurs tend to make efforts towards reducing environmental impacts when they are interested in a particular topic (e.g., reducing water consumption or car usage), but at the same time, they neglect to invest in technologies even if

it is subsidised (e.g., purchasing battery electric vehicles) (Szennay et al., 2021). Basri et al. (2022) have also concluded that good leaders may lead by example and solve each challenge by responding to sustainability issues and recognising the connections between practices, people, institutions, and places. Although Benedek and Takácsné György (2016) claim that the majority of managers of Hungarian small and medium-sized enterprises (SMEs) shifted from the traditional view of shareholders' primacy, and Sági and Szennay (2022) suggest that Hungarian entrepreneurs consider their environmental and/or social impacts in business decisions, micro and small enterprises generally lack sufficient expertise and capacity to foster sustainability. Furthermore, SMEs generally do not take into consideration the expectations of their stakeholders in a conscious way, like larger or even multinational companies, but external pressures (e.g., legal compliance or expectations of business partners) and motivations (e.g., governmental aids) may significantly influence their operations. Evidence shows that external pressures positively influence green production practices, corporate reputation, and the environmental performance of manufacturing SMEs, even in a developing country like Ghana (Baah et al., 2021). According to Kitsis and Chen (2021), the relationship between green operations and stakeholder pressures is mediated by the top management commitment (TMC), so it can be claimed that analysing internal drivers, like attitudes and knowledge, are also crucial to fully understand the behaviour of businesses.

Authors claim that entrepreneurial motivation may also influence the attitude towards sustainability. Venâncio and Pinto (2020) found that entrepreneurship contributes negatively to the achievement of the SDGs in the case of necessity and non-innovative entrepreneurship, while Dhahri et al. (2021) concluded that opportunity entrepreneurship has a positive impact on the three dimensions of sustainable development, while necessity entrepreneurship has a negative impact on the environmental sustainability dimension. Analysing Hungarian data of Global Entrepreneurship Monitor (GEM), Győri et al. (2022) claim that unlike in the case of other entrepreneurial motivations, there is no causal relationship between considering environmental and/or social impacts of business decisions and the entrepreneurial motivation of earn a living. Liñán and Fayolle (2015) claim that sustainable entrepreneurial intention is a prominent area of research. Arru (2020) attempted to map the factors behind sustainable entrepreneurial intentions and found that subconscious and subjective motivations, as well as personality traits, influence sustainable entrepreneurship.

Some authors analysed the attitudes towards sustainability and the corresponding influences of the public, with a special focus on the younger generations. Guo et al. (2022) examined the attitudes of British and Chinese undergraduates by quantifying their psychosocial variables, including awareness of climate change and energy sources, and their behavioural intentions, i.e., willingness to pay a financial premium for renewables and nuclear power. Vuorio et al. (2017) claim that sustainability-oriented entrepreneurial intentions are influenced by attitudes towards sustainability and perceived entrepreneurial desirability among university students, while results of Kuckertz and Wagner (2010) show that science and engineering students show the strongest entrepreneurial intention to start sustainable businesses.

The importance of the environmental and social impacts of SMEs has been highlighted in a number of studies. In the Hungarian context, Győri et al. (2022) examined the motivational factors for sustainability orientation using GEM data and found that the young age of the firm had the most significant positive effect. However, little is known about the extent to which enterprises consider their own environmental and social impacts important and whether they take steps to minimise their environmental and maximise their social impacts. The aim of this research is to fill this gap and to investigate whether Hungarian SMEs consider their environmental and social impacts and, beyond awareness, whether they are willing to take concrete action. The novelty of the research is that it separates the consideration of responsible behaviour and the concrete actions for responsible behaviour of SMEs.

2. Methodology

The analysis is based on the Hungarian datasets of the Global Entrepreneurship Monitor (GEM) Adult Population Survey (APS) 2021 and 2022. Each dataset is representative of the 18-64-year-old adult population of Hungary (n=2000), but only the subsample of entrepreneurs is taken into consideration. GEM is a consortium of national teams to collect and analyse data on entrepreneurship and entrepreneurship ecosystem directly from individual entrepreneurs based on a common methodology. Thus, it can be considered the world's foremost study of entrepreneurship, as national teams represent countries with almost half of the global population and two-thirds of GDP in both 2021 (GEM (Global Entrepreneurship Monitor), 2022) and 2022 (GEM (Global Entrepreneurship Monitor), 2023). The data collection of the APS is coordinated by the Global GEM team and examines the role of the individual in the life cycle of the entrepreneurial process. Thus, all surveys are subject to several quality assurance checks before data collection begins. The resulting data are repeatedly checked before publication (for example GEM (Global Entrepreneurship Monitor), 2023). According to the GEM methodology entrepreneurship has four phases. The first one, when startup of a business including any type of self-employment or selling any goods or services is expected in the next 3 years. Nascent entrepreneurs have

an existing enterprise which did not pay wages or salaries for 3 months, while baby businesses paid wages or salaries between 3 and 42 months. These latter two together are called total early-stage entrepreneurial activity (TEA). The fourth phase is the established business (EB), for which salaries or wages have been paid for more than 42 months (for example GEM (Global Entrepreneurship Monitor), 2023).

Hungarian GEM data are available only for the years 2021 and 2022 since the former national team terminated its membership in the international consortium in 2016. To have a larger sample of entrepreneurs, these two years of data were merged into one dataset database, assuming that attitudes and behaviours of entrepreneurs toward social and environmental responsibility do not change significantly over one year and there was no such new policies or other external circumstances which could significantly alter them. Thus, the sample consists of 697 entrepreneurs' answers (see Table 1).

Table 1: Number of entrepreneurs in the sample (source: own elaboration)

Year	Total early-stage entrepreneurial activity (TEA)	Established business owner (EB)	Total
2021	191	168	359
2022	198	140	338
Total	**389**	**308**	**697**

As the APS questionnaire has two similar question blocks with seven questions, each concerning responsibility in the case of nascent entrepreneurs and owner-managers, answers to each pair of questions were merged (see Table 2).

Table 2: Variable descriptions (source: own elaboration, based on GEM definitions)

Variable	Variable name	SDG goal*	Description
Social implications	SDG_soc	1-5	The entrepreneur considers social implications when making decisions about the future of his/her business
Environmental implications	SDG_env	6, 12-15	The entrepreneur considers environmental implications when making decisions about the future of his/her business
Social and/or environmental impact outweighs profitability or growth	SDG_pri	1-15	The entrepreneur prioritises the social and/or environmental impact of his/her business above profitability or growth
Steps to minimise environmental impact	SDG_steps1	6, 12-15	The entrepreneur has taken any steps to minimise the environmental impact of his/her business over the past year
Steps to maximise social impact	SDG_steps2	1-5	The entrepreneur has taken any steps to maximise the social impact of his/her business over the past year
Aware of SDGs	SDG_aware1	all	The entrepreneur is aware of the 17 United Nations SDGs.
Considering SDG in KPIs	SDG_aware2	various	The entrepreneur identified any of the goals which are a priority for his/her business and defined a set of clear objectives, actions and Key Performance Indicators

* Based on the United Nations (2015), where people, planet and profit were considered as social, environmental and economic pillars of sustainable development, respectively.

Ong and Puteh (2017) summarised the Common Statistical Analysis Used in the Social Science Research Field. As variables concerning attitudes and behaviours of entrepreneurs towards social and environmental responsibility are dichotomous or measured on a five-scale Likert scale, the relationships between them were analysed by nonparametric correlation tests (i.e., Kendall's tau b and Spearman's rho). The non-parametric comparison analysis is usually undertaken when the number of sample data is quite small, and the nature of the targeted measurement variable is nominal or ordinal measurements. Therefore, the Mann-Whitney and Kolmogorov-Smirnov test was used to compare the distribution of the samples. In addition, independent samples of Kruskal-Wallis tests were also chosen for the analysis. The ANOVA method was used to test the relationships between the fields (Derrick and White, 2017). Data analysis has been limited to applying standard procedures according to common conventions, such as the use of principal component analysis with the Quartimax rotation method with Kaiser normalisation (Kaiser, 1958). Rotation is therefore needed by rotating the axes of the factors to obtain simpler and more meaningful factor solutions. Cronbach's alpha coefficient was employed to determine the reliability of the questionnaire. All analyses were conducted in SPSS 29.

3. Results and discussion

As one of the limitations of the findings may be that the entrepreneurs' subsample is not representative, nonparametric analyses were conducted to test the homogeneity of distribution of both entrepreneurs' and non-entrepreneurs' subsamples. Two analyses were run for the control variables of (1) gender, (2) education, and (3) age. In the first analysis, the database was split into two parts (entrepreneurs and non-entrepreneurs), while in the second analysis, the database was split into three parts (non-entrepreneur, TEA, EB) to compare the distributions of the variables. Both Mann-Whitney and two-sample Kolmogorov-Smirnov tests show that only in the case of age can be considered the two subsamples homogenously, while their distributions concerning age and gender differ ($p < 0.001$). Kruskal-Wallis tests showed significantly different distributions for all three control variables ($p < 0.001$) when different phases of entrepreneurship were taken into consideration. It should be emphasised that distributions of TEA and EB are homogenous ($p \geq 0.05$) in the case of age and education. These results may be explained by the fact that entrepreneurs are generally older and have higher education than the total population, and in addition, they are mostly men (Csákné Filep et al., 2023).

To assess the reliability of questions measured on the Likert-scale (SDG_soc, SDG_env, SDG_pri), Cronbach alpha was calculated (0.654), which results are above the validity threshold (0.6).

Descriptive statistics (see Table 3) show that 79.8 % of entrepreneurs agree totally or somewhat with the statement that environmental implications are taken into consideration in their business decisions, and 65.5 % of them claimed similarly in the case of social implications. Social and/or environmental impact outweighs profitability or growth in the case of almost half of the entrepreneurs (48.4 %). The situation, however, is not so straightforward in the case of steps to maximising social and minimising environmental impacts: although the majority (62.8 %) of entrepreneurs did take measures to minimise environmental impacts, only 36.4 % of them reported similarly in the case of maximising social impacts (see Table 4). We suggest that it can be explained by the fact that it is much easier to find low or no-cost measures (e.g., recycling, using more efficient devices, etc.) and even grants to implement investments reducing energy usage when a business fosters environmental friendliness, but it is not the case when attempting to maximise social impact (e.g., employing disadvantaged people or even women with small children). The vast majority (74.9 %) of entrepreneurs are not aware of SDGs, but among them, it is rather likely (72.4 %) that the entrepreneur identified any of the goals which are a priority for his/her business and defined a set of clear objectives, actions, and Key Performance Indicators.

Table 3. Descriptive statistics of variables measured on five scale Likert-scale (5 is the best option)

Variable name	Number of items	Mean	Standard deviation	Share of 'Agree' or 'Somewhat agree' answers
Social implications	695	3.71	1.35	65.5 %
Environmental implications	697	4.14	1.19	79.8 %
Social and/or environmental impact outweighs profitability or growth	681	3.31	1.29	48.4 %

Table 4. Descriptive statistics of dichotomous variables (1=yes, 2=no)

Variable name	Number of items	Mean	Standard deviation	Share of 'yes' answers
Steps to minimise environmental impact	686	1.37	0.48	62.8 %
Steps to maximise social impact	680	1.64	0.48	36.4 %
Aware of SDGs	693	1.75	0.43	25.1 %
Considering SDG in KPIs	176	1.28	0.45	72.4 %

The results show that there is a significant correlation ($p < 0.01$) between the 7 variables analysed concerning entrepreneurs' responsibility, except the two that concern SDGs. While SDG awareness correlates with prioritising social/environmental impact over profitability or growth ($p < 0.05$) and with both steps taken to minimise environmental ($p < 0.01$) and maximise social impact ($p < 0.01$), considering SDGs in the KPI framework correlates only with steps taken toward maximising social impacts ($p < 0.05$). Based on the correlation coefficients, we can state that when an entrepreneur reported a higher level of responsibility in a particular variable, he/she tended to report higher value on the others as well. Therefore, to reduce the number of variables concerning entrepreneurs' responsibility behaviours, a factor analysis was conducted on the base of the five correlating variables. Both the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test confirmed that the dataset is appropriate to perform factor analysis (0.693 and $p < 0.001$, respectively). Based on eigenvalues from principal component analysis, two factors could be created, which explain 62.785 % of the total variance. The rotated component matrix shows that variables concerning intentions – namely considering environmental or social impact in decision-making and prioritising environmental/social impacts above profitability or growth – decouple

from those concerning taking any steps towards minimising environmental or maximising social impacts (see Table 5). In Table 5, negative signs can be explained by the coding, as the best option for variables SDG_soc, SDG_env and SDG_pri was coded by the highest value, while in the case of SDG_steps1 and SDG_steps2 with the lowest one. This finding may suggest that considering environmental/societal impacts does not necessarily mean that any action was taken towards managing these impacts.

Table 5: Components of the factors created (source: own elaboration)

	Component 1	Component 2
Environmental implications	0.784	-0.171
Social implications	0.754	-0.178
Social and/or environmental impact outweighs profitability or growth	0.749	
Steps to maximise social impact	-0.103	0.833
Steps to minimize environmental impact	-0.239	0.757

The results by factor analysis show that two factors can be created, explaining 62.785 % of the five analysed variables' total variance. While the first factor consists of the three variables concerning intentions, namely concerning social/environmental aspects in business decisions and social/environmental impact outweighs profit and growth, the second factor regards concrete steps done towards managing impact. This could mean that entrepreneurs' intentions and their steps towards responsible behaviour are not necessarily consistent with each other.

4. Conclusion

The paper aims to analyse the factors of responsible and sustainable entrepreneurial behaviour in Hungary, using individual-level empirical data from the Global Entrepreneurship Monitor. The results show that variables concerning responsible attitudes and behaviours significantly correlate with each other – except for two variables concerning directly with SDGs. This finding can be explained by the fact that only one-fourth (25.1 %) of entrepreneurs are aware of SDGs.

The key finding is that there is a gap between the thinking and actions of SMEs in relation to sustainability. Although most SMEs consider acting responsibly and considering sustainability important, this doesn't automatically mean that these intentions are reflected in their actions. Further research is needed to explore the reasons for this phenomenon and the best practices that help SMEs turn their sustainability intentions into action. The paper has two major implications. First, it can contribute to policymaking concerning sustainable entrepreneurship, namely as the majority of entrepreneurs are concerned with social/environmental aspects in their business decisions but they come short of taking steps towards responsible actions that can be incentivised with targeted aids. Second, curriculum development on responsible and sustainable entrepreneurship may be necessary as most entrepreneurs are not aware of SDGs. Understanding sustainability risks is important for all companies, but particularly for those involved in manufacturing, especially material-intensive sectors and the chemical industry.

One of the main limitations of the results is that the questions analysed are based on the standardised GEM methodology, so they are measured on a Likert scale. Therefore, it was not feasible to provide a deeper insight into entrepreneurs' attitudes and behaviours towards responsibility. Nonetheless, as similar data are available for any countries participating in GEM, regional comparisons could be made, which may be a promising future research stream.

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